

VOLUME 11

# NCHRP

NATIONAL  
COOPERATIVE  
HIGHWAY  
RESEARCH  
PROGRAM

## REPORT 500

Guidance for Implementation of the  
AASHTO Strategic Highway Safety Plan

### Volume 11: A Guide for Increasing Seatbelt Use



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**NCHRP REPORT 500**

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**Guidance for Implementation of the  
AASHTO Strategic Highway Safety Plan**

***Volume 11: A Guide for  
Increasing Seatbelt Use***

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Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

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The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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## FOREWORD

By Charles W. Niessner  
Staff Officer  
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The goal of the AASHTO Strategic Highway Safety Plan is to reduce annual highway fatalities by 5,000 to 7,000. This goal can be achieved through the widespread application of low-cost, proven countermeasures that reduce the number of crashes on the nation's highways. This eleventh volume of *NCHRP Report 500: Guidance for Implementation of the AASHTO Strategic Highway Safety Plan* provides strategies that can be employed to increase the use of seatbelts. The report will be of particular interest to safety practitioners with responsibility for implementing programs to reduce injuries and fatalities on the highway system.

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In 1998, AASHTO approved its Strategic Highway Safety Plan, which was developed by the AASHTO Standing Committee for Highway Traffic Safety with the assistance of the Federal Highway Administration, the National Highway Traffic Safety Administration, and the Transportation Research Board Committee on Transportation Safety Management. The plan includes strategies in 22 key emphasis areas that affect highway safety. The plan's goal is to reduce the annual number of highway deaths by 5,000 to 7,000. Each of the 22 emphasis areas includes strategies and an outline of what is needed to implement each strategy.

NCHRP Project 17-18(3) is developing a series of guides to assist state and local agencies in reducing injuries and fatalities in targeted areas. The guides correspond to the emphasis areas outlined in the AASHTO Strategic Highway Safety Plan. Each guide includes a brief introduction, a general description of the problem, the strategies/countermeasures to address the problem, and a model implementation process.

This is the eleventh volume of *NCHRP Report 500: Guidance for Implementation of the AASHTO Strategic Highway Safety Plan*, a series in which relevant information is assembled into single concise volumes, each pertaining to specific types of highway crashes (e.g., run-off-road, head-on) or contributing factors (e.g., aggressive driving). An expanded version of each volume, with additional reference material and links to other information sources, is available on the AASHTO Web site at <http://transportation1.org/safetyplan>. Future volumes of the report will be published and linked to the Web site as they are completed.

While each volume includes countermeasures for dealing with particular crash emphasis areas, *NCHRP Report 501: Integrated Management Process to Reduce Highway Injuries and Fatalities Statewide* provides an overall framework for coordinating a safety program. The integrated management process comprises the necessary steps for advancing from crash data to integrated action plans. The process includes methodologies to aid the practitioner in problem identification, resource optimization, and performance measurements. Together, the management process and the guides provide a comprehensive set of tools for managing a coordinated highway safety program.

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# Acknowledgments

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This volume of *NCHRP Report 500* was developed under NCHRP Project 17-18(3), the product of which is a series of implementation guides addressing the emphasis areas of AASHTO's Strategic Highway Safety Plan. The project was managed by CH2M HILL, and the co-principal investigators were Ron Pfefer of Maron Engineering and Kevin Slack of CH2M HILL. Timothy Neuman of CH2M HILL served as the overall project director for the team. Kelly Hardy, also of CH2M HILL, served as a technical specialist on the development of the guides.

The project team was organized around the specialized technical content contained in each guide, and the team included nationally recognized experts from many organizations. The following team of experts, selected based on their knowledge and expertise in this particular emphasis area, served as lead authors for the seatbelt guide:

- Roy E. Lucke  
Northwestern University Center for Public Safety
- Richard A. Raub  
Northwestern University Center for Public Safety

Development of the volumes of *NCHRP Report 500* utilized the resources and expertise of many professionals from around the country and overseas. Through research, workshops, and actual demonstration of the guides by agencies, the resulting documents represent best practices in each emphasis area. The project team is grateful to the following list of people and their agencies for supporting the project through their participation in workshops and meetings and additional reviews of the seatbelt guide:

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# Summary

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## Introduction

The AASHTO Strategic Highway Safety Plan identified 22 goals that need to be pursued to achieve a significant reduction in highway crash fatalities. The strategies are divided into three broad categories affecting drivers, vehicles, or the highway. User guides are planned to assist agencies with implementation. Strategy 8, which is located in the driver area, addresses the topic of occupant protection. This is a very broad topic that can include

- Increasing use of seatbelts and child passenger and booster seats
- Improving knowledge of airbag function
- Designing generally safer and more forgiving vehicle interiors

This guide addresses means to increase the use of both seatbelts and child safety and booster seats. For this emphasis area, the phrase “child safety seats” includes all devices intended to protect younger passengers in vehicles, specifically rear-facing infant carriers and booster seats. This area also is focused on the added objective of ensuring proper use of child safety seats according to the age and size of the child.

Seatbelts began to appear in vehicles in the 1950s, and increasingly better systems were required in the decades thereafter. Use of seatbelts did not increase much above 10 percent, however, until mandatory use laws were enacted in the early 1980s. In the years since, every state but one has enacted a seatbelt use law. Laws mandating the use of child safety seats followed a similar pattern. The devices were little known until the late 1970s<sup>1</sup> and were not widely used until laws mandating their use came into effect, just ahead of seatbelt use laws. These laws, however, remain inconsistent in terms of what age or weight child must be restrained, what restraint type is appropriate for what size child, and applicability of the law when a nonparent is transporting the child. In addition, and largely unlike seatbelts, *proper* use of these devices is as important as their use generally. While it is possible to misuse a seatbelt, it is far easier to improperly secure a child into a restraint and easier still to improperly secure the seat to the vehicle.

When mandatory seatbelt-use laws were enacted in most states, a police officer could take enforcement action only if unrestrained passengers were identified following a traffic stop for some other purpose. This type of law is generally referred to as a “secondary enforcement” law. That is, the seatbelt law could be enforced only secondary to another traffic offense. Now, more and more states are making failure to wear seatbelts a primary offense, which can be cited on its own. While secondary enforcement laws have been successful in raising restraint use above 50 percent, primary enforcement has produced the

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<sup>1</sup> Infant carriers were common by this time and were often used for transporting very young children in autos, but they were not designed to be locked into the vehicle’s occupant restraint system and offered virtually no crash protection to their occupants.

highest use rates seen in the United States (and internationally). The most effective single strategy for improving occupant restraint use rates is enactment of standard (primary) enforcement laws in all states.

While laws have proven very helpful in increasing occupant restraint usage, they alone are not sufficient to increase use. The public must be made aware of the laws *and* must have a reasonable expectation that the laws will be enforced.

For this project, however, the focus is more on what can be accomplished by single agencies or local coalitions. Therefore, this guide will suggest strategies for increasing

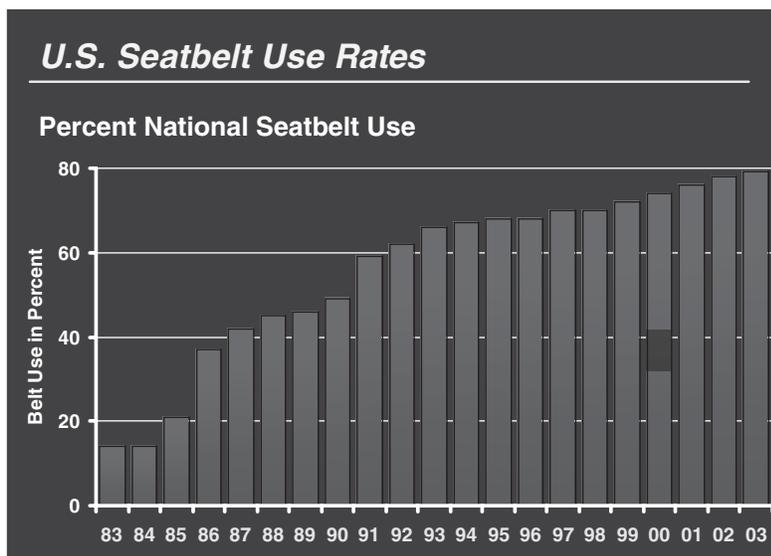
- Public awareness of occupant restraint laws and the value of using restraints
- Enforcement levels of those laws

## Type of Problem Being Addressed

NHTSA survey data (see [Exhibit I-1](#)) show that occupant restraint use has improved across almost all classes of vehicle occupants. The first mandatory use law was passed by New York. By 1992, as more states enacted laws, approximately five of every eight (62 percent) occupants were restrained. As the new century has started, usage is approaching 80 percent, and only one state (New Hampshire) lacks a mandatory use law.

While usage rates have steadily increased, the rate of increase has slowed. This is a function of both the fact that percent changes become smaller as usage approaches 100 percent and

**EXHIBIT I-1**  
National Seatbelt Use Rates, 1983–1986  
*Source: NHTSA City and State Surveys*



the fact that the “easy” converts to restraint have buckled up—in other words, once 60 or 70 percent of the people are in seatbelts, increasing the usage rate by even 10 percent becomes very difficult. The challenge now is to increase restraint usage among those who have not yet accepted the educational or enforcement messages.

As shown in [Exhibit I-2](#), driving national usage rates to higher levels should have significant economic benefits as well as saving lives. Other studies have shown that those with the highest crash risk (generally young male drivers from less educated and lower socioeconomic classes) are also those with the lowest restraint usage rates. Therefore, even though the increases in percent usage will be smaller, the potential savings in both lives and economic loss can be proportionately higher.

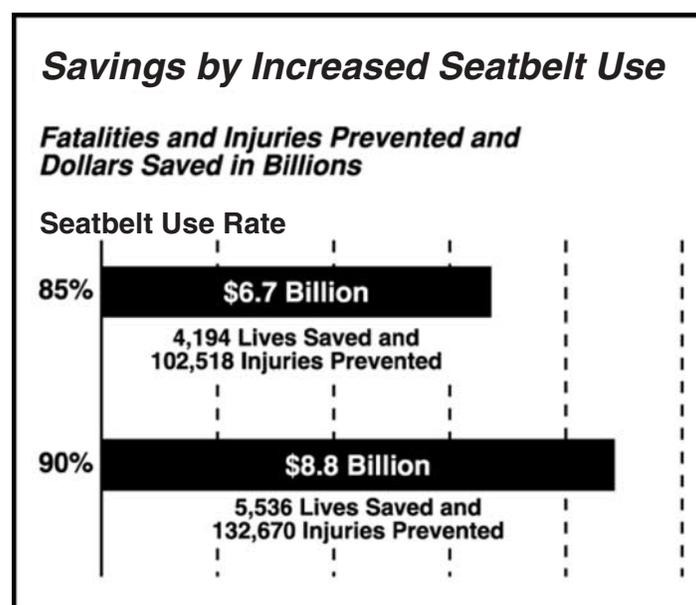
Restraint use for children, especially infants and toddlers, is very high, exceeding 90 percent in recent national surveys. NHTSA states that these devices have been shown to be 71 percent effective in reducing the risk of death to infants and 54 percent effective in reducing deaths to children between the ages of 1 and 4. However, a 1996 study on child passenger safety conducted by the National Transportation Safety Board (NTSB) examined whether child restraint systems were properly used, and found that in 62 percent of the cases, the restraint was improperly secured in the vehicle and/or the child was improperly secured in the child restraint. This high level of child safety seat misuse was consistent with the findings of both a 1983 NTSB report and a 1985 NTSB symposium on child restraint misuse. The issue to be addressed concerning child restraints, then, is not their use generally; rather, it is ensuring *proper* use.

In addition, while all states do have child restraint laws, there is considerable variation among those laws. Some states have adopted what is considered a model law, covering

#### EXHIBIT I-2

Potential Savings with Increased Restraint Usage

Source: U.S. Department of Transportation, 1997



children of all ages in all seating positions, regardless of who owns or is operating the vehicle. Other states have less satisfactory laws that do not cover all ages or seating positions or that exempt nonparent drivers from the law.

## Objectives and Strategies for Resolving the Problem

Three objectives were identified for the occupant restraint area:

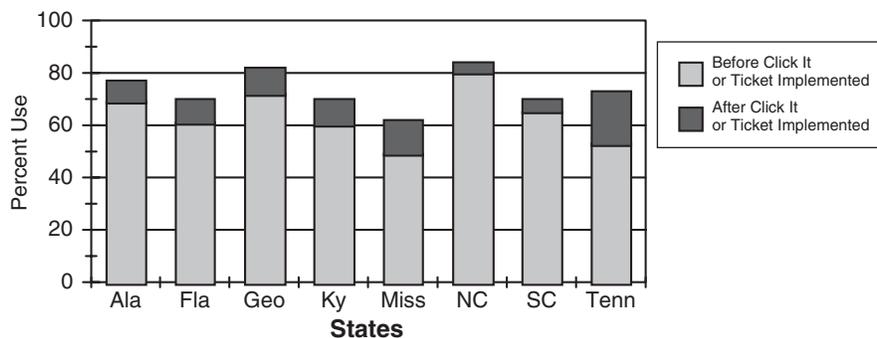
1. Initiate programs to maximize use of occupant restraints by all vehicle occupants
2. Insure that child and infant restraints are properly used
3. Provide access to appropriate information, materials, and guidelines for those implementing programs to increase occupant restraint use

The intent of these objectives is to enable primarily local and regional entities, but also entire states, to implement programs to increase use of restraints and to ensure that those systems are properly used. Restraint use for adults varies across the states from just over 55 percent (Massachusetts) to more than 90 percent (California, Hawaii, and Washington). Many studies have been done on the effectiveness of occupant restraints, and they continue to show that vehicle occupants are about 50 percent more likely to be hospitalized from crash-related injuries if they were not wearing a seatbelt at the time of the crash (Boyle and Sharp, 1997a, 1997c).

Targeted programs to increase restraint usage have been proven effective. Localities in some states have implemented programs that have increased local restraint use by 20 to 30 percentage points over statewide averages at the start of their program. Entire states have also implemented programs that have increased use substantially. [Exhibit I-3](#) shows the restraint usage increases attained by states after implementation of the “Click It or Ticket” program throughout each of those states.

The combination of enforcement and public information campaigns appears to be the key to achieving meaningful, lasting increases in restraint usage. Recent studies by the Insurance Institute for Highway Safety (IIHS) (Insurance Institute for Highway Safety, 2001) show that public education efforts alone, without an enforcement component, are generally not successful.

**EXHIBIT I-3**  
Click It or Ticket Seatbelt Use Rate Increases



The objectives are listed in [Exhibit I-4](#), along with a series of strategies recommended for achieving them.

**EXHIBIT I-4**

Emphasis Area Objectives and Strategies

Objectives	Strategies
8.1 A Maximize use of occupant restraints by all vehicle occupants	8.1 A1 Conduct highly publicized enforcement campaigns to maximize restraint use.
	8.1 A2 Provide enhanced public education to population groups with lower than average restraint use rates.
	8.1 A3 Encourage the enactment of local laws that will permit standard enforcement of restraint laws.
8.1 B Insure that restraints, especially child and infant restraints, are properly used	8.1 B1 Provide community locations for instruction in proper child restraint use, including both public safety agencies and health care providers, that are almost always available.
	8.1 B2 Conduct high-profile “child restraint inspection” events at multiple community locations.
	8.1 B3 Train law enforcement personnel to check for proper child restraint use in all motorist encounters.
8.1 C Provide access to appropriate information, materials, and guidelines for those implementing programs to increase occupant restraint use	8.1 C1 Create state-level clearing houses for materials that offer guidance in implementing programs to increase restraint use.

# Introduction

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The AASHTO Strategic Highway Safety Plan identified 22 goals that need to be pursued to achieve a significant reduction in highway crash fatalities. The strategies are divided into three broad categories affecting drivers, vehicles, or the highway. User guides are planned to assist agencies with implementation. Strategy 8, which is located in the driver area, addresses the topic of occupant protection. This is a very broad topic that can include

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- Improving knowledge of airbag function
- Designing generally safer and more forgiving vehicle interiors

This guide addresses means to increase the use of both seatbelts and child safety seats. For this emphasis area, the phrase “child safety seats” includes all devices intended to protect younger passengers in vehicles, specifically including rear-facing infant carriers and booster seats. This area also is focused on the added objective of ensuring proper use of child safety seats according to the age and size of the child. While seatbelts were first made available in U.S.-built passenger vehicles in the mid-1950s, their installation did not become mandatory until 1964 (a requirement for shoulder belts was added in 1968 with the three-point restraint mandated in 1973). Even though the belts were required in the vehicles, there were at that time no laws requiring their use. As a result, seatbelt use in most areas languished at 10 percent or less. Usage did not increase significantly until the introduction of mandatory seatbelt use laws in the 1980s.

Laws mandating the use of child safety seats followed a similar pattern. The devices were little known until the 1970s<sup>1</sup> and were not widely used until laws mandating their use came into effect just ahead of seatbelt use laws. All states soon passed laws requiring the use of child safety seats. However, these laws were inconsistent in terms of what age or weight child must be restrained, what restraint type is appropriate for what size child, and applicability of the law when a nonparent was transporting the child. In addition, and largely unlike seatbelts, *proper* use of these devices is as important as their use generally. While it is possible to misuse a seatbelt, it is far easier to improperly secure a child into a safety seat and easier still to improperly secure the seat to the vehicle.

When mandatory seatbelt use laws were enacted in most states, they usually differed from most other traffic laws in one specific aspect: a police officer could not stop a vehicle if the only visible violation was failure to use a seatbelt. The officer could take enforcement action only if unrestrained passengers were identified following a traffic stop for some other purpose. This type of law is generally referred to as “secondary enforcement.” That is, the seatbelt law could only be enforced secondary to another traffic offense. The officer does not

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<sup>1</sup> Infant carriers were common by this time and were often used for transporting very young children in autos, but they were not designed to be locked into the vehicle’s occupant restraint system and offered virtually no crash protection to their occupants.

necessarily need to cite a driver (or occupant) for the initial violation, but that first violation must be documented to validate the secondary restraint violation.

While these secondary enforcement laws have been successful in raising restraint use above 50 percent in most cases, permitting standard, or primary, enforcement for violations of the restraint laws has produced the highest use rates seen in the United States (and internationally).

While laws have proved very helpful in increasing occupant restraint usage, the laws alone are not sufficient to increase use. The public must be made aware of the laws, and the public must have a reasonable expectation that the laws will be enforced.

“It would be impossible to overstate the lifesaving and dollar-saving impact of increases in safety belt use.”<sup>2</sup> The single most effective strategy for improving occupant restraint use rates is enactment of standard enforcement laws in all states. NHTSA is working with the states to accomplish this. For this project, however, the focus is more on what can be accomplished by single agencies or local coalitions. Therefore, this guide will suggest strategies for increasing

1. Public awareness of occupant restraint laws and the value of using restraints
2. Enforcement levels of those laws

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<sup>2</sup> NHTSA Administrator Jeffrey W. Runge, M.D., in a November 17, 2003, news release (National Highway Traffic Safety Administration, 2003a). Available online at <http://www.nhtsa.dot.gov/nhtsa/announce/press/pressdisplay.cfm?year=2003&filename=pr49-03.html>.

## SECTION III

# Type of Problem Being Addressed

## General Description of the Problem

A 2003 survey conducted by the NHTSA shows that occupant restraint use has continued to improve across almost all classes of vehicle occupants (see [Exhibit III-1](#)).

### EXHIBIT III-1

Percent Restraint Use by Year, Age, Sex, Race, and Urbanization (Estimates and Sampling Standard Errors)

Category	Year				
	1994	1996	1998	2000	2002*
<b>Age</b>					
Infant	88 (2.0)	85 (7.3)	97 (5.2)	95 (2.9)	99
Toddler	61 (5.1)	60 (7.5)	91 (4.0)	91 (3.7)	94
Youth	58 (3.6)	65 (3.8)	72 (4.9)	66 (7.4)	82 (2.4)
Young Adult	53 (2.8)	50 (4.0)	57 (2.5)	69 (3.5)	69 (1.9)
Adult	} 59 (2.2)**	62 (1.8)	70 (1.4)	72 (3.0)	76 (1.7)
Senior		69 (3.3)	77 (3.0)	76 (3.7)	82 (1.9)
<b>Sex</b>					
Female	64 (2.2)	68 (1.6)	76 (1.4)	77 (2.6)	79 (1.7)
Male	54 (2.1)	57 (1.8)	63 (1.6)	67 (3.0)	72 (1.6)
<b>Race</b>					
White	60 (2.0)	63 (1.5)	70 (1.3)	74 (2.9)	76 (1.6)
Black	53 (3.4)	51 (2.9)	65 (3.3)	69 (4.8)	77 (2.2)
Other	55 (4.8)	58 (6.5)	65 (5.1)	69 (5.9)	78 (1.9)
<b>Urbanization</b>					
Urban	58 (3.9)	61 (1.7)	74 (1.7)	72 (7.0)	72 (2.0)
Suburban	63 (1.6)	64 (1.5)	67 (2.2)	72 (2.9)	76 (2.7)
Rural	53 (3.5)	60 (3.8)	67 (1.8)	68 (3.7)	73 (2.2)

\* 2002 National Occupant Protection Use Survey (NOPUS) changed the "youth" category to cover ages 8–15 rather than 5–15 and added a new category, "Booster Age," to cover ages 4–7 with "Toddler" dropping to only ages 2 and 3. In 2002 restraint usage for Booster Age was 83 percent. Standard error figures were not available for the younger occupant categories in 2002.

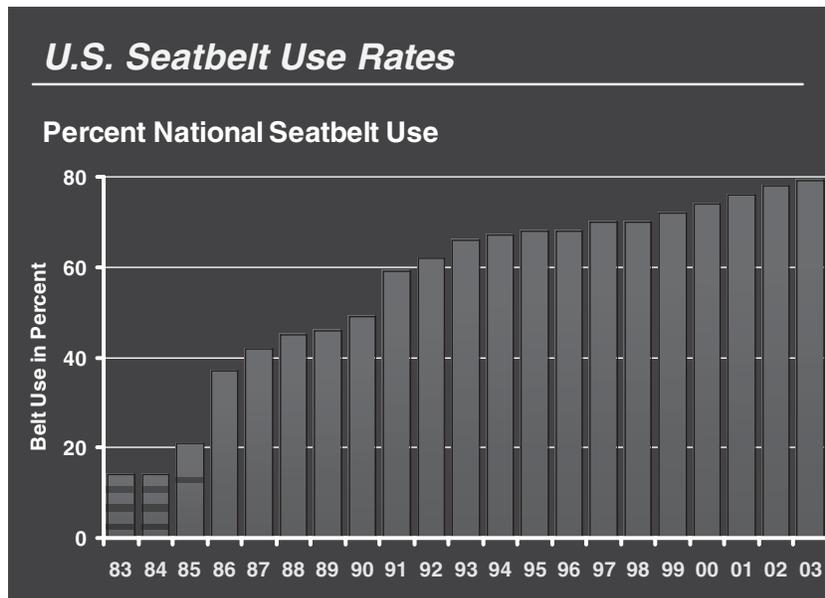
\*\* 1994 NOPUS collected only Adult (25 years or older).

Source: National Highway Traffic Safety Administration, 2004.

Looking back at earlier surveys, dating from the passage of the earliest mandatory use laws, the trend of increasing use can be even more clearly seen in [Exhibit III-2](#). The first mandatory use law was passed by New York, and between 1984 and 1987, 31 states passed some form of mandatory restraint usage law. In this period, restraint usage nationally increased from 14 to 42 percent—a three-fold increase. By 1992, as more states enacted laws, approximately 5 of every 8 (62 percent) occupants were restrained. As the new century has started, usage is approaching 80 percent with 16 states exceeding 80 percent and only one state (New Hampshire) lacking a mandatory use law.

**EXHIBIT III-2**

National Seatbelt Use Rates, 1983–2003

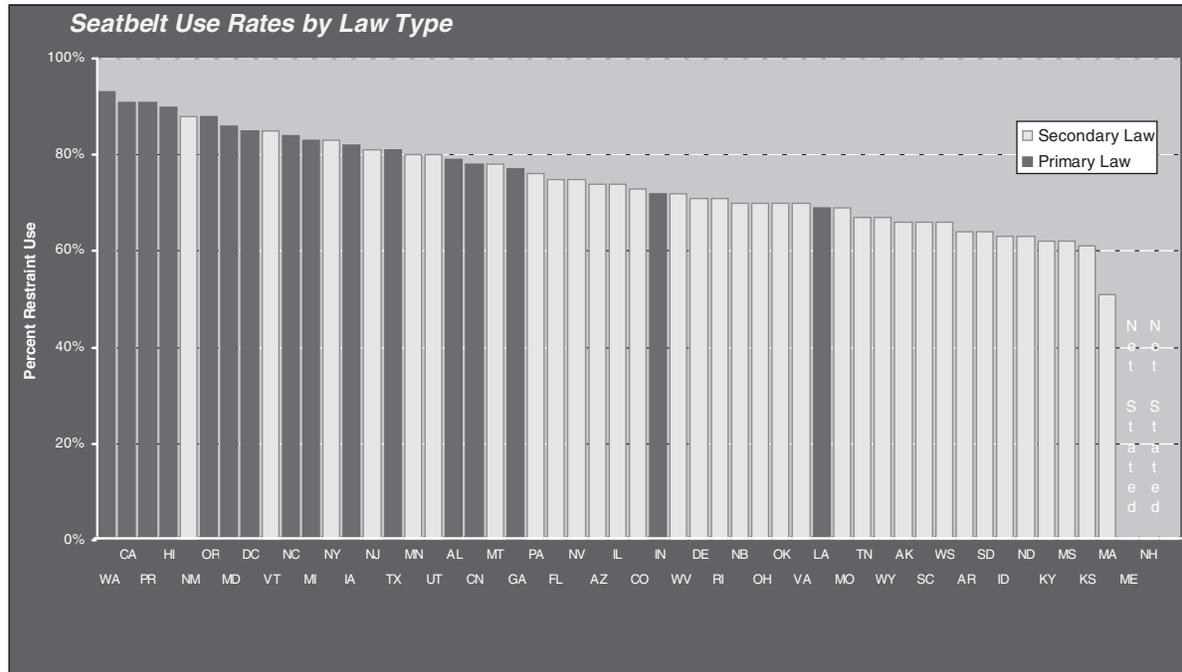
*Source: National Highway Traffic Safety Administration, 2004b.*

Additional data from NHTSA show occupant restraint use by state (see [Exhibit III-3](#)). The figure shows that states with standard enforcement laws have higher restraint usage rates. The figure also shows a regional trend in restraint usage, with Far Western states generally having higher usage rates than other regions of the country. One of the Eastern states in the top ten states for usage is North Carolina; one probable reason for this is its public information, education, and enforcement campaigns. While the highest use rates are concentrated in the Far West, it is noted that there is no regional pattern for the states with the lowest use rates: they are scattered among the Upper Great Plains, Deep South, Midwest, and New England.

While usage rates have steadily increased, the rate of increase has slowed. This is a function of both that fact that percent changes become smaller as usage approaches 100 percent, and the fact that the “easy” converts to restraint have buckled up. It also probably reflects the

**EXHIBIT III-3****Seatbelt Use by State, 2002 Survey**

Source: National Highway Traffic Safety Administration, 2004b.



changes in vehicle fleet and seatbelt design over the period. The challenge now is to increase restraint usage among those who have not yet accepted the educational or enforcement messages. While [Exhibit III-3](#) shows that a standard enforcement law encourages usage, states without such a law, such as Washington State, can also achieve high usage rates.

As shown in [Exhibit III-4](#), raising national usage rates to higher levels will have significant economic benefits as well as saving lives. Other studies have shown that those with the highest crash risk (generally young male drivers from less educated and lower socioeconomic classes) are also those with the lowest restraint usage rates. Therefore, even though the increases in percent usage will be smaller, the potential savings in both lives and economic loss can be proportionately higher.

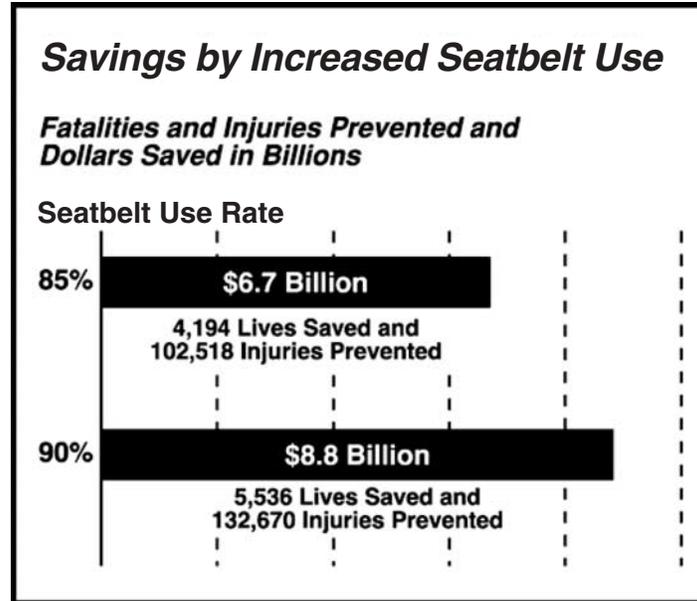
In regard to child restraints, including booster seats, NHTSA states that these devices have been shown to be 71 percent effective in reducing the risk of death to infants and 4 percent effective in reducing deaths to children between the ages of 1 and 4 in passenger cars. NHTSA also estimates that lap/shoulder belts reduce the risk of fatal injury by 45 percent and moderate to critical injury by 50 percent for front seat passenger car occupants who are older than 5 years. Despite the effectiveness of child restraints and lap/shoulder belts in reducing the likelihood of severe and fatal injuries, crashes continue to occur in which apparently restrained children are being injured and killed.

A 1996 study on child passenger safety conducted by the NTSB examined whether child restraint systems were properly used, and found that in 62 percent of the cases, the restraint was improperly secured in the vehicle and/or the child was improperly secured in the child restraint. A 1999 study by the National Safe Kids Campaign found that 85 percent of child

**EXHIBIT III-4**

Potential Savings with Increased Restraint Usage

Source: U.S. Department of Transportation, 1997



seats were misused (National Safety Council, 1999). This high level of child safety seat misuse was consistent with the findings of both a 1983 NTSB report (National Transportation Safety Board, 1983) and a 1997 NTSB symposium on child restraint misuse (National Transportation Safety Board, 1997).

As seen in [Exhibit III-1](#), restraint use for children, especially infants and toddlers, is very high, exceeding 90 percent in recent national surveys. The trend in child fatality rates has shown considerable decreases. The issue to be addressed concerning child restraints, then, is not their use generally; rather, it is ensuring *proper* use.

In addition, while all states do have child passenger restraint laws, there is considerable variation among those laws. Some states have adopted what is considered a model law, covering children of all ages in all seating positions, regardless of who owns or is operating the vehicle. Other states have less satisfactory laws that do not cover all ages or seating positions or exempt nonparent drivers from the law.

For an analysis of child passenger restraint laws in the United States, see [http://www.highwaysafety.org/safety\\_facts/state\\_laws/restrain.htm](http://www.highwaysafety.org/safety_facts/state_laws/restrain.htm).

Guidelines for a model law may be found at [http://www.carseat.org/Legal/637\\_Guide\\_CPSlaw.pdf](http://www.carseat.org/Legal/637_Guide_CPSlaw.pdf) and [http://www.safekids.org/tier3\\_cd.cfm?content\\_item\\_id=831&folder\\_id=183](http://www.safekids.org/tier3_cd.cfm?content_item_id=831&folder_id=183).

The highly regarded law for the State of California is summarized at [http://www.carseat.org/Legal/6\\_sum\\_CA\\_Law.pdf](http://www.carseat.org/Legal/6_sum_CA_Law.pdf).

SECTION IV

# Index of Strategies by Implementation Timeframe and Relative Cost

Exhibit IV-1 classifies strategies for this emphasis area according to the expected timeframe and relative cost. In several cases, time for implementation will be dependent upon such factors as the agency’s procedures, the number of stakeholders involved, policies and legislative issues, and the presence of any controversial situations. The range of costs may also be somewhat variable for some of these strategies, owing to many of the same factors. Placement in the table below is meant to reflect costs relative to the other strategies listed for this emphasis area only. The estimated level of cost is for the commonly expected application of the strategy.

**EXHIBIT IV-1**  
Classification of Strategies

Timeframe for Implementation	Relative Cost to Implement and Operate			
	Low	Moderate	Moderate to High	High
Short (less than a year)	8.1 B1 Provide community locations for instruction in proper child restraint use, including both public safety agencies and health care providers, that are almost always available	8.1 B3 Train law enforcement personnel to check for proper child restraint use in all motorist encounters	—	—
	8.1 B2 Conduct high-profile “child restraint inspection” events at multiple community locations			
	8.1 A2 Provide enhanced public education to jurisdictions and population groups with lower than average restraint use rates			
Medium (1–2 years)	8.1 A3 Encourage the enactment of local laws that will permit standard enforcement of restraint laws	8.1 C1 Create state-level clearing houses for materials that offer guidance in implementing programs to increase restraint use	8.1 A1 Conduct highly publicized enforcement campaigns to maximize restraint use	—
Long (more than 2 years)	—	—	—	—

# Description of Strategies

## Objectives

Three objectives were identified for the occupant restraint area:

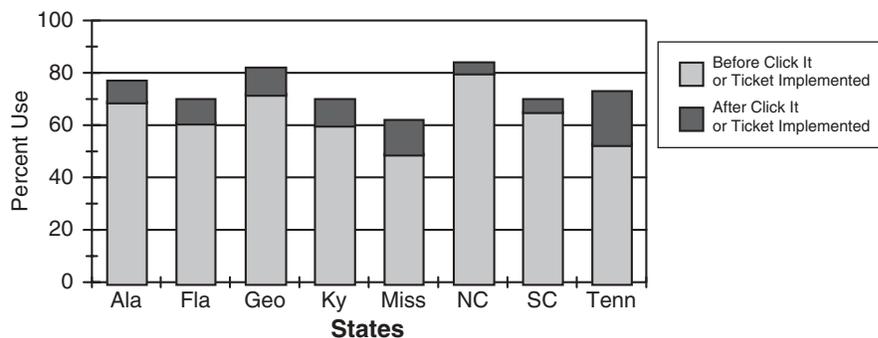
1. Initiate programs to maximize use of occupant restraints by all vehicle occupants;
2. Ensure that restraints for children of all ages are properly used; and
3. Provide access to appropriate information, materials, and guidelines for those implementing programs to increase occupant restraint use.

The intent of these objectives is to enable primarily local and regional entities, but also entire states, to implement programs to increase use of restraints and to ensure that those systems are properly used. Restraint use for adults varies across the states from just over 55 percent (Massachusetts) to more than 90 percent (California, Hawaii, and Washington). Many studies have been done on the effectiveness of occupant restraints, and they continue to show that vehicle occupants are about 50 percent more likely to be hospitalized from crash-related injuries if they were not wearing a seatbelt at the time of the crash (Boyle and Sharp, 1997a, 1997c).

Targeted programs to increase restraint usage have been proven effective. Localities in some states have implemented programs that have increased local restraint use by 20 to 30 percentage points over statewide averages at the start of their program. Entire states also have implemented similar programs. [Exhibit V-1](#) shows the restraint usage increases attained by states after implementation of the “Click It or Ticket” program throughout each of those states. Details of the “Click it or Ticket” campaign can be found later in this section or check the following Web site: [http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/BUA\\_WEBSITE/Archive-04/Cases/NorthCarolina.html](http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/BUA_WEBSITE/Archive-04/Cases/NorthCarolina.html).

Even North Carolina, which is a primary enforcement state and which has one of the highest use rates in the country, was able to increase use another 4 percent during this campaign.

**EXHIBIT V-1**  
Click It or Ticket Seatbelt Use Rate Increases



The average increase in belt usage during other state programs was almost 10 percent. The key to the campaign was a combination of enforcement and public information and education on a statewide basis.

However, even a secondary enforcement state can achieve significant increases in usage. Montana has increased their rate to 75 percent through efforts of education and increased attention to enforcing the seatbelt law *in conjunction* with standard traffic enforcement at the community level.<sup>1</sup>

*The combination of enforcement and public information campaigns appears to be the key to achieving meaningful, lasting increases in restraint usage.* Recent studies by the IIHS (Insurance Institute for Highway Safety, 2001) show that public education efforts alone, without an enforcement component as demonstrated in Montana, are generally not successful.

The objectives are listed in [Exhibit V-2](#), along with a series of strategies recommended for achieving them.

**EXHIBIT V-2**  
Emphasis Area Objectives and Strategies

Objectives	Strategies
8.1 A Maximize use of occupant restraints by all vehicle occupants	8.1 A1 Conduct highly publicized enforcement campaigns to maximize restraint use. (P)  8.1 A2 Provide enhanced public education to population groups with lower than average restraint use rates. (P)  8.1 A3 Encourage the enactment of local laws that will permit standard enforcement of restraint laws. (T)
8.1 B Insure that restraints, especially child and infant restraints, are properly used	8.1 B1 Provide community locations for instruction in proper child restraint use, including both public safety agencies and health care providers, that are almost always available. (T)  8.1 B2 Conduct high-profile “child restraint inspection” events at multiple community locations. (P)  8.1 B3 Train law enforcement personnel to check for proper child restraint use in all motorist encounters. (T)
8.1 C Provide access to appropriate information, materials, and guidelines for those implementing programs to increase occupant restraint use	8.1 C1 Create state-level clearing houses for materials that offer guidance in implementing programs to increase restraint use. (E)

P = proven; T = tried; E = experimental

<sup>1</sup> For more information, contact Al Goke at agoke@state.mt.us.

## Explanation of Strategy Types

The strategies in this guide were identified from a number of sources, including the literature, contact with state and local agencies throughout the United States, and federal programs. Some of the strategies are widely used, while others are used at state, regional, or local levels. Some have been subjected to well-designed evaluations to prove their effectiveness. On the other hand, it was found that many strategies, including some that are widely used, have not been adequately evaluated.

The implication of the widely varying experience with these strategies, as well as the range of knowledge about their effectiveness, is that the reader should be prepared to exercise caution in many cases before adopting a particular strategy for implementation. To help the reader, the strategies have been classified into three types, each identified by a letter symbol throughout the guide:

- **Proven (P):** Strategies that have been used in one or more locations and for which properly designed evaluations have been conducted that show the strategy to be effective. These strategies may be employed with a good degree of confidence, but any application can lead to results that vary significantly from those found in previous evaluations. The attributes of the strategies that are provided will help the user judge which strategy is the most appropriate for the particular situation.
- **Tried (T):** Those strategies that have been implemented in a number of locations and may even be accepted as standards or standard approaches, but for which there have not been found valid evaluations. These strategies—while in frequent, or even general, use—should be applied with caution, carefully considering the attributes cited in the guide and relating them to the specific conditions for which they are being considered. Implementation can proceed with some degree of assurance that there is not likely to be a negative impact on safety and very likely to be a positive one. It is intended that as the experiences of implementation of these strategies continue under the AASHTO Strategic Highway Safety Plan initiative, appropriate evaluations will be conducted, so that effectiveness information can be accumulated to provide better estimating power for the user, and the strategy can be upgraded to a “proven” one.
- **Experimental (E):** Those strategies that are ideas that have been suggested and that at least one agency has considered sufficiently promising to try on a small scale in at least one location. These strategies should be considered only after the others have proven not to be appropriate or feasible. Even where they are considered, their implementation should initially occur using a very controlled and limited pilot study that includes a properly designed evaluation component. Only after careful testing and evaluations show the strategy to be effective should broader implementation be considered. It is intended that as the experiences of such pilot tests are accumulated from various state and local agencies, the aggregate experience can be used to further detail the attributes of this type of strategy, so that it can be upgraded to a “proven” one.

## Targeting the Objectives

The objectives presented here are intended for a variety of target audiences. Implementation will best be done by local or regional community coalitions, although local law enforcement could carry out some strategies on their own.

The first strategy for the first objective must have law enforcement involvement, since it is focused on law enforcement. The second strategy can be implemented by law enforcement or any other interested group, although law enforcement should be involved. The final strategy under the first objective need not directly involve law enforcement, since it involves enactment of local law.

The first two strategies for the second objective can involve any community-based entity, including law enforcement. The key for both strategies is having individuals and facilities available in the community. The final strategy there relates strictly to law enforcement.

The final objective is focused at the state level. While a state DOT could be the enabling entity, other organizations, both governmental and nongovernmental, could provide the action recommended.

## Related Strategies for Creating a Truly Comprehensive Approach

It is recommended that related strategies be included as candidates in any program planning process to create a truly comprehensive approach to the highway safety problems associated with this emphasis area. In fact, the effort to increase the use of seatbelts will be a compatible concomitant effort with just about any of the strategies recommended for any of the emphasis areas included in the AASHTO Strategic Highway Safety Plan.

Two basic types of strategies are emphasized in the above objectives: enforcement and public information and education. However, there are others that should be taken into general consideration as important to be functioning along with those specified for this particular emphasis area.

- **Strategies to Improve Emergency Medical and Trauma System Services:** Treatment of injured parties at highway crashes can have a significant impact on the level of severity and length of time that an individual spends in treatment. This is especially true when it comes to timely and appropriate treatment of severely injured persons. Thus, a basic part of a highway safety infrastructure is a well-based and comprehensive emergency care program. While the types of strategies that are included here are often thought of as simply support services, they can be critical to the success of a comprehensive highway safety program. Therefore, for this emphasis area, an effort should be made to determine if there are improvements that can be made to this aspect of the system, especially for programs that are focused upon location-specific (e.g., corridors) or area-specific (e.g., rural areas) issues. As additional guides are completed for the AASHTO Plan, they may address the details regarding the design and implementation of emergency medical systems strategies. When that occurs, the appropriate links will be added from this emphasis area guide.
- **Strategies Directed at Improving the Safety Management System:** The management of the highway safety system is foundational to success. There should be in place a sound organizational structure—as well as an infrastructure of laws, policies, etc.—to monitor, control, direct, and administer a comprehensive approach to highway safety. It is important that a comprehensive program not be limited to one jurisdiction, such as a state DOT. Local agencies often have the majority of the road system and its related

safety problems to deal with. They also know, better than others do, what the problems are. As additional guides are completed for the AASHTO Plan, they may address the details regarding the design and implementation of strategies for improving safety management systems. When that occurs, the appropriate links will be added from this emphasis area guide.

## **Objective 8.1 A—Maximize Use of Occupant Restraints by All Vehicle Occupants**

### **Strategy 8.1 A1: Conduct Highly Publicized Enforcement Campaigns to Maximize Restraint Use**

Enactment of mandatory restraint laws has increased restraint use substantially in every state in which they were passed. In addition, when states have replaced secondary enforcement laws with standard enforcement, restraint use again increases.<sup>2</sup> Though laws themselves increase use, it is the addition of promised enforcement that increases seatbelt use.

Whether a state has standard or secondary enforcement, seatbelt laws, highly publicized enforcement campaigns, along with public information and education, have been shown to be effective in increasing restraint use. While restraint-use levels reached during such campaigns usually drop off after the campaign ends, they tend to remain above precampaign levels. The model for this type of campaign was developed by the State of North Carolina in its “Click it or Ticket”<sup>3</sup> program. It has been successfully copied by several other states. Nearly every law enforcement agency in these states has participated in “Click it or Ticket.” Since the start of the North Carolina program, law enforcement officers have operated nearly 30,000 checkpoints and issued more than 200,000 seatbelt and 18,000 child safety seat citations. North Carolina media outlets of all kinds provided materials to alert citizens about the program. Before “Click it or Ticket” began in 1993, about 65 percent of North Carolinians buckled up. Restraint use has climbed to 84 percent, one of the higher rates in the nation. Since “Click it or Ticket” began in 1993, fatal and serious highway injuries in North Carolina have been cut by 14 percent. The result: a savings of at least \$135 million in health-care-related costs. While not all the improvement in the State’s crash experience can be credited to increased restraint use, it certainly seems to have played a major role.

While standard enforcement states have an advantage, in that officers can stop vehicles for only that violation, enforcement can be effective in states with only secondary enforcement laws. Montana has demonstrated that a good community program with active support from law enforcement can achieve high rates of use. From very low percentages, usage has risen for the state as a whole to 78 percent.<sup>4</sup> This was done by energizing communities to support a program designed to increase seatbelt use.

Increasing use of occupant restraints is a low-cost strategy in comparison with others. The primary restraint, the lap/shoulder belt, exists in every post-1964 vehicle. Child/infant seats or boosters cost less than \$100 and are available at no cost or reduced cost to many users.

<sup>2</sup> The difference between standard and secondary enforcement is described on page II-1.

<sup>3</sup> [http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/BUA\\_WEBSITE/Archive-04/Cases/NorthCarolina.html](http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/BUA_WEBSITE/Archive-04/Cases/NorthCarolina.html).

<sup>4</sup> *Safety Belt and Helmet Use in 2002* (Glassbrenner, 2002).

The cost of implementing most of these strategies lies in getting people to properly use those restraints that are available to them.

Past traffic-law-related programs, particularly in the impaired driving area, have shown that law “crackdowns,” without accompanying publicity, are ineffective in improving compliance with the law (even though arrest rates might increase). Although similar programs have not been reported where enforcement of restraint use was not accompanied by public information and education, comparable lack of effectiveness would be expected in the seatbelt area. Similarly, recent studies have shown that public information and education, without accompanying enforcement, have not been as effective.

Therefore, the strategy proposed here is to implement enforcement that is made effective through carefully coordinated public-information and education campaigns designed to maximize occupant-restraint usage. These programs can be implemented on either statewide or local levels. Care must be taken, however, to ensure that a form of “profiling” is not being used to target members of a particular group for increased police enforcement. Rather, it must be emphasized that the intent of the program is to protect members of the community by both increasing their safety and, by increasing compliance with the law, reducing the chances that members of the group will be stopped by law enforcement.

### EXHIBIT V-3

#### Strategy Attributes for Conducting Highly Publicized Enforcement Campaigns to Maximize Restraint Use

Attribute	Description
Target	The driving population that does not routinely use occupant restraints.
Expected Effectiveness	<p>Various combined enforcement and public information and education (PI&amp;E) campaigns have shown that this strategy can substantially increase restraint usage. Studies have also shown that these two elements must be used in combination. PI&amp;E without enforcement has not shown sustained increases in restraint usage.</p> <p>The effectiveness of increased seatbelt and restraint device usage has been generally estimated by NHTSA (see the section on the type of problem being addressed). Therefore, success and effectiveness are usually measured in terms of the surrogate measure of increased usage. Examples of successful campaigns include the following:</p> <ul style="list-style-type: none"> <li>• Click It or Ticket (North Carolina): <a href="http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/BUA_WEBSITE/Archive-04/Cases/NorthCarolina.html">http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/BUA_WEBSITE/Archive-04/Cases/NorthCarolina.html</a></li> <li>• Buckle Up NOW! (Elmira, New York): <a href="http://www.highwaysafety.org/safety_facts/elmira.pdf">http://www.highwaysafety.org/safety_facts/elmira.pdf</a></li> <li>• Making it Click in Michigan: <a href="http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/Cases/michigancasestudy.html">http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/Cases/michigancasestudy.html</a></li> </ul>
Keys to Success	<p>The primary key to success is to combine the enforcement and PI&amp;E efforts. The successful campaigns referred to here publicized the campaign heavily, in a mix of media, and then made sure that enforcement efforts were as visible as possible, as well as being well reported in the media.</p> <p>Strong cooperative agreements are also needed if more than one agency/entity is going to participate in the event. All law enforcement agencies operating in the area must agree to participate in the project.</p>

**EXHIBIT V-3 (Continued)****Strategy Attributes for Conducting Highly Publicized Enforcement Campaigns to Maximize Restraint Use**

<b>Attribute</b>	<b>Description</b>
Potential Difficulties	Unwillingness of media to assist in getting the campaign message out and/or not reporting on enforcement efforts. Lack of priority by all officers in the law enforcement agencies. Reluctance of courts to sanction the citations for failure to wear seatbelts in secondary enforcement states.
Appropriate Measures and Data	<p>The primary measure of effectiveness will be the change in severity of crashes. However, the effect of restraint-use campaigns can be difficult to separate from other concomitant factors. Therefore, the change in the percentage of people observed to be using seatbelts is a popular surrogate.</p> <p>Process measures can include the following:</p> <ul style="list-style-type: none"> <li>• Number of citations issued for not wearing seatbelts or using child restraints</li> <li>• PI&amp;E airtime and/or column-inches of print reporting</li> <li>• Police officer time on directed seatbelt enforcement patrol and/or checkpoints</li> </ul>
Associated Needs	The need for a strong coordinated PI&E campaign may require the services of professionals with this expertise to design, prepare, implement, and monitor the program.
Organizational, Institutional, and Policy Issues	<p>The primary organizational issue is referred to under “Key to Success” above—all relevant organizations must agree to participate in the project.</p> <p>The nature of the seatbelt laws in the project jurisdiction can raise policy issues, particularly if they have a secondary enforcement law. Two policy options to consider are whether to conduct general safety checkpoints where restraint use is among items checked and how agencies will handle double citations if traffic stops must be made initially for an offense other than failure to wear seatbelts.</p>
Issues Affecting Implementation Time	The key here is to have one person with overall responsibility for the project. That individual should be able to keep all project components operating according to schedule. In addition, the time required to prepare materials for reaching the target community may take significant time, especially if those that are to do the job must be contracted with from outside the agency.
Costs Involved	<p>There are two potential cost items here. The first is media production. Billboards and handouts are usually included in this type of campaign. Funding or donation agreements must be in place to meet these needs. Paid media is usually not needed for this type of project.</p> <p>The other cost consideration is overtime required for use of law enforcement personnel. If officers are to be brought back to staff checkpoints or conduct saturation patrols, arrangements will need to be in place to cover these salaries.</p>
Training and Other Personnel Needs	Assuming public information personnel are already in place in the relevant agencies, no additional training should be needed to manage the PI&E aspect of the program. Law enforcement personnel should not need training in enforcing occupant restraint laws. However, officers may benefit from motivational messages delivered at such times as roll call.

*(continued on next page)*

**EXHIBIT V-3 (Continued)**

## Strategy Attributes for Conducting Highly Publicized Enforcement Campaigns to Maximize Restraint Use

Attribute	Description
Legislative Needs	<p>Some improvements in state laws may be needed. For instance, while all states do have child passenger restraint laws, there is considerable variation among those laws. Some states have adopted what is considered a model law covering children or all ages in all seating positions, regardless of who owns or is operating the vehicle. Other states have less satisfactory laws that do not cover all ages or seating positions, or exempt nonparent drivers from the law. For an analysis of child passenger restraint laws in the United States see <a href="http://www.highwaysafety.org/safety_facts/state_laws/restrain.htm">http://www.highwaysafety.org/safety_facts/state_laws/restrain.htm</a>. Guidelines for a model law may be found at <a href="http://www.carseat.org/Legal/637_Guide_CPSlaw.pdf">http://www.carseat.org/Legal/637_Guide_CPSlaw.pdf</a> and <a href="http://www.safekids.org/tier3_cd.cfm?content_item_id=831&amp;folder_id=183">http://www.safekids.org/tier3_cd.cfm?content_item_id=831&amp;folder_id=183</a></p> <p>The highly regarded law for California is summarized at <a href="http://www.carseat.org/Legal/6_sum_CA_Law.pdf">http://www.carseat.org/Legal/6_sum_CA_Law.pdf</a></p> <p>The need for local laws is addressed in Strategy 8.1 A3</p>

### Strategy 8.1 A2: Provide Enhanced Public Education to Population Groups with Lower than Average Restraint Use Rates

The preceding strategy is focused on increasing occupant restraint usage generally. Here, the focus is on specific population groups that have lower than average restraint usage. These groups can be defined by socioeconomic status, race, ethnicity, age, sex, locale, or any other factor that can be used to define a population of people.

For example, it was well documented that seatbelt and child restraint use is lowest among persons of lowest socioeconomic status (Campbell and Campbell, 1986). The 2000 update of *The Use of Safety Restraint Systems in Virginia by Occupants Under 16 Years of Age: The 2000 Survey Results* (Stoke, 2001) recommended that bolstered efforts be directed at smaller communities and rural areas and at occupants of rear seating in that state because of low rates of use observed. In a study by Lerner et al. (2001), the demographic factors associated with reported seatbelt use included age, gender, race, and income. NHTSA reported that in 2002 overall seatbelt use was 75 percent, but the last seatbelt use rate recorded for Hispanics was 63 percent (Glassbrenner, 2002).

The general approach for this strategy is similar to that of the first strategy. It is assumed that local at-risk populations have been identified, either by local observations or analysis of available crash-related data, or that local populations mirror documented national trends. However, before a campaign is launched, the population group to be targeted is approached. Meetings are held with key leaders in the target communities to discuss the campaign and its impact on these communities. These meetings provide an opportunity to gain feedback and to assess reactions to the proposed programs. In most cases, the communities with lower than average restraint use rates have higher than average traffic fatality rates. The proposed campaign seeks to gain support from population group leaders prior to implementation by specifically emphasizing that the ultimate goals of the campaign are to reduce death and injury rates within that group. The most successful model for such a campaign was

implemented in South Carolina (see <http://www.nhtsa.dot.gov/people/injury/airbags/Archive-04/Click%20It%20Web/index.html>).

An additional example of an ongoing program directed toward both students in high schools and senior citizens has been underway in Jefferson County, Wisconsin. The activity is part of the Jefferson County Safe Communities Coalition also called “Stop Crashes.” Their material can be found at <http://www.stopcrashes.com/>.

Other examples of campaigns and materials of this type include the following:

- Seat Belts and African Americans, [http://www.nhtsa.dot.gov/people/outreach/safesobr/22qp/seatbelt\\_fact\\_sheets/seatbelts\\_afr\\_amer.html](http://www.nhtsa.dot.gov/people/outreach/safesobr/22qp/seatbelt_fact_sheets/seatbelts_afr_amer.html)
- Seat Belts and Hispanics, <http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/seatbeltshispanic/index.htm>
- “Conoce la Realidad o Sufre las Consecuencias” (“Know the Facts or Suffer the Consequences”) <http://www.nhtsa.dot.gov/people/injury/airbags/Archive-04/Know%20the%20Facts%20web/>

#### EXHIBIT V-4

#### Strategy Attributes for Providing Enhanced Public Education to Population Groups with Lower than Average Restraint Use Rates

Attribute	Description
Target	Members of population groups (geographical, ethnic, age, gender, race, etc.) whose restraint use is lower than average.
Expected Effectiveness	<p>The effectiveness of increased seat belt and restraint device usage has been generally estimated by NHTSA (see Section III, Type of Problem Being Addressed). Therefore, success and effectiveness are usually measured in terms of the surrogate measure of increased usage.</p> <p>The program in South Carolina, however, provided the following results: “Safety belt use rates improved dramatically, particularly among the nonwhite population. Overall usage rates increased from 65.5 percent to 73.9 percent. Nonwhite use rates increased from 56.1 percent to 70.4 percent, an astounding 14.3 percentage points. Seatbelt use among males increased from 59.2 percent to 67.9 percent, an increase of 11.5 percent. There was a 29.5-percent decrease in fatalities (31 deaths in 2000 compared to 44 fatalities during the same period in 1999).”</p> <p>The Jefferson County (Wisconsin) Safe Communities Coalition has been able to achieve more than 87-percent usage in selected populations. This has occurred in a state that has a secondary enforcement law.</p>
Keys to Success	<p>The primary key to success is to verify that the group/community being targeted does have below average restraint use rates. This can be done through local surveys or observations (or at least informal observations to confirm local conformance to national use rates).</p> <p>It is also important to have a “champion” from within the group/community toward which the campaign will be directed. This will both give the effort credibility and provide guidance in focusing materials, appropriate media, and message.</p>

*(continued on next page)*

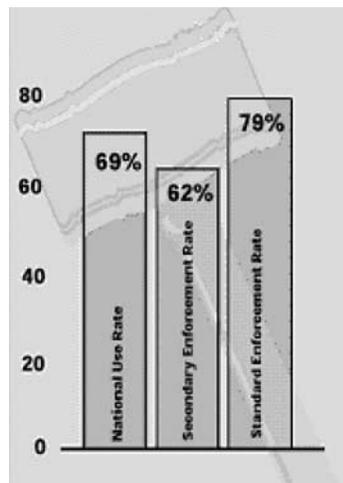
**EXHIBIT V-4 (Continued)**

## Strategy Attributes for Providing Enhanced Public Education to Population Groups with Lower than Average Restraint Use Rates

<b>Attribute</b>	<b>Description</b>
Potential Difficulties	The group/community toward which the campaign is being directed must be assured that they will not be targets of police profiling or otherwise be singled out for extra enforcement or other special law enforcement attention.
Appropriate Measures and Data	<p>The primary measure of effectiveness will be a change in restraint usage by members of the group/community toward whom the campaign is directed. This is a surrogate for change in crash severity. Observational surveys of seatbelt usage may be done before and after implementing the program.</p> <p>Process measures can include the following:</p> <ul style="list-style-type: none"> <li>• PI&amp;E airtime and/or column-inches of print reporting</li> <li>• Police officer time on directed seatbelt enforcement patrol and/or checkpoints</li> <li>• Number of citations issued for not wearing seatbelts</li> </ul>
Associated Needs	Accurate surveys and/or observations are needed to identify the groups/communities that are below average in restraint use.
Organizational, Institutional, and Policy Issues	<p>The primary organizational issue is referred to under “Keys to Success” above—the need to identify and involve a “champion” from within the targeted group. In addition, mechanisms are needed to encourage members of the group, and other stakeholders, to participate in all stages of the effort, from planning through implementation.</p> <p>A policy issue will be to ensure that law enforcement does not focus on the group targeted by the campaign. Believing that they might have been “set up” for increased law enforcement contacts could seriously damage the hoped-for effect of the message and the credibility of the entity working to increase restraint use in that community.</p>
Issues Affecting Implementation Time	The key here is to have one person with overall responsibility for the project. That individual should be able to keep all project components operating according to schedule. In addition, the time required to prepare materials for reaching the target community may take significant time, especially if those that are to do the job must be contracted with from outside the agency.
Costs Involved	<p>The primary costs for this strategy are media production, as well as costs associated with making presentations to targeted groups and organizations. Billboards, public service announcements, and handouts are usually included in this type of campaign. Funding or donation agreements must be in place to meet these needs. Paid media is usually not needed for this type of project.</p> <p>If seatbelt use surveys or observations need to be paid for, that would represent an additional significant cost.</p>
Training and Other Personnel Needs	Assuming public information personnel are already in place in the relevant agencies, no additional training should be needed. However, officers may benefit from motivational messages, as well as cautions against the use of profiling, delivered at such times as roll call.
Legislative Needs	There do not appear to be any special legislative needs for this strategy.

### Strategy 8.1 A3: Encourage the Enactment of Local Laws That Will Permit Standard Enforcement of Restraint Laws

In many states, the legislature has been very reluctant to change the law from secondary to standard enforcement. It is more desirable to enact standard enforcement occupant laws on the state level, if at all possible. The reluctance to do so is present, even though studies show that restraint use is high with standard (or primary) enforcement; see [Exhibit V-5](#). For organizations that are interested in trying to enact such state-level laws, resources are available. See <http://www.nhtsa.dot.gov/people/injury/airbags/model/safetybeltlaw.html>, and <http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/enforceseatbeltlaws/index.html>.



**EXHIBIT V-5**  
Seatbelt Use Rate by Enforcement Type  
Source: National Highway Traffic Safety Administration, 1999.

However, in some of these states, communities have passed local laws (ordinances), permitting standard enforcement in that jurisdiction. These efforts have been upheld by the courts in these states and are a means of increasing local restraint usage.

An example of a local ordinance is given in Appendix 1. This ordinance is also available online at [http://fws.municode.com/CGI-BIN/om\\_isapi.dll?advquery=belt&aquery=belt&depth=1&depth=1&headingswithhits=on&headingswithhits=on&hitsperheading=on&hitsperheading=on&infobase=13575.nfo&record={635}&record=dochitfirst&softpage=newtestMainframeMatches&submit1=Search](http://fws.municode.com/CGI-BIN/om_isapi.dll?advquery=belt&aquery=belt&depth=1&depth=1&headingswithhits=on&headingswithhits=on&hitsperheading=on&hitsperheading=on&infobase=13575.nfo&record={635}&record=dochitfirst&softpage=newtestMainframeMatches&submit1=Search).

Enactment of this strategy is usually a two-stage process. First, the local authorities need to be convinced to pass an appropriate ordinance. A local coalition of individuals and/or organizations concerned with traffic safety is a good example of the mechanism through which this might be accomplished. Then, the local ordinance must be publicized, the local enforcement agency must enforce it, and the courts must apply appropriate sanctions. The publicity for the law usually includes posting notice of the law on main routes into the community so that nonresidents are aware that standard enforcement of the law is permitted there. In some cases, the courts have required such posting.

The key to implementing this strategy is to seek out communities that have police chiefs and senior law enforcement officials who strongly support seatbelt law enforcement. It is also important to research the trends in those communities' legislative bodies to see if they have

passed other ordinances dealing with public safety and health issues and, if they have, become informed of how much these preventable injuries were costing their communities. It is also important to know if they have shown a willingness to go beyond other state laws to improve safety and quality of life.

**EXHIBIT V-6**

## Strategy Attributes for Encouraging the Enactment of Local Laws That Will Permit Standard Enforcement of Restraint Laws

<b>Attribute</b>	<b>Description</b>
Target	Communities in states that do not have standard enforcement mandatory occupant restraint usage laws.
Expected Effectiveness	<p>Surveys of restraint usage consistently show that use is greater in states with standard enforcement than those with secondary enforcement (see Exhibit V-5). Since many state legislatures have not been willing to enact standard enforcement laws, cities and other municipalities can enact local legislation (ordinances) to permit standard enforcement within their jurisdiction.</p> <p>It is anticipated that restraint usage within these standard enforcement communities would exceed the state average. Although no formal research has been done in this area, one community with such a local ordinance (Lincolnshire, Illinois) reports restraint usage at 80 percent on arterial roads and 88 percent on local roads, compared to 71-percent statewide average usage.</p>
Keys to Success	<p>The primary key to success is for an advocate within the community to encourage the local government to enact standard enforcement legislation. This advocacy can come from within the government (police, emergency medical services [EMS], public health) or a citizen-based organization or coalition (emergency nurses association, local safety committee, etc.).</p> <p>In addition, stakeholders should be involved in the planning and implementation efforts for related programs to institute the law.</p>
Potential Difficulties	State law must permit such local initiatives. Local government must be willing to take a highly visible position on such an issue.
Appropriate Measures and Data	The process measures include whether or not the local unit of government enacts a standard enforcement ordinance, measures of targeted enforcement activity, measures of PI&E efforts, measure of conviction success, and a measure of sanctions applied. Subsequent impact evaluation would look at changes in occupant restraint use rates after the standard enforcement ordinance is enacted, with accompanying public education and visible enforcement, etc.
Associated Needs	Accurate surveys and/or observations are needed to show local restraint use before and after the ordinance is enacted and in comparison to statewide averages.
Organizational, Institutional, and Policy Issues	<p>An advocacy group within the community generally must encourage enactment of the local standard enforcement law, and the local unit of government must be willing to enact such relatively high-profile legislation.</p> <p>A mechanism is needed for stakeholders to be involved throughout the process in a meaningful way.</p>

**EXHIBIT V-6 (Continued)****Strategy Attributes for Encouraging the Enactment of Local Laws That Will Permit Standard Enforcement of Restraint Laws**

<b>Attribute</b>	<b>Description</b>
Issues Affecting Implementation Time	A significant amount of time may be required to convince the appropriate legislators that a law is needed. Once the law is passed, there will be a period required for the law enforcement agency to initiate targeted enforcement and time needed to mount a PI&E campaign. This could take at least 6 months after a law is passed, depending upon availability of personnel and budget.
Costs Involved	Possible significant cost elements include the conduct and analysis of seatbelt use surveys, special enforcement efforts, and PI&E programs.
Training and Other Personnel Needs	An information campaign that targets legislators and their constituents, as well as the judiciary, may facilitate the adoption of the law.
Legislative Needs	The goal of the strategy is to pass local legislation. However, state statutes must permit local units of government to enact such laws.

## **Objective 8.1 B—Insure That Restraints, Especially Child and Infant Restraints, Are Properly Used**

### **Strategy 8.1 B1: Provide Community Locations for Instruction in Proper Child Restraint Use**

A study by the National Transportation Safety Board (NTSB)<sup>5</sup> showed that 62 percent of child and infant seats are not used properly. The most common types of misuse are the following:

- Not properly securing the child seat to the vehicle
- Placing child seats, particularly rear-facing infant carriers, in front seats where they can be struck by inflating airbags
- Improperly securing the child in the restraint device

In most cases these are errors of ignorance. Parents and others assume they are properly securing their children only to find that they have possibly placed the child at even greater risk of injury by not using safety devices properly.

To implement this strategy, communities need to identify and develop facilities that are generally available where individuals can drive in with their child and restraint device and have it checked for proper use. Such facilities might include fire stations, public health facilities, driver's license offices, vehicle emissions testing stations, etc. Individuals should be available during a large portion of the day (e.g., 8:00 or 9:00 a.m. to 7:00 or 8:00 p.m.) to do the inspections. For an example of insurance industry support for a regional program in Canada, see: [http://www.mpi.mb.ca/english/rd\\_safety/kidsafe/free\\_seat\\_checks.html](http://www.mpi.mb.ca/english/rd_safety/kidsafe/free_seat_checks.html).

<sup>5</sup> *Putting Children First*, National Transportation Safety Board, Washington, D.C. NTSB/SR-00/02, 2000

There also needs to be a continuing public information campaign to let individuals know that such a facility is available and that it is needed due to high device misuse rates. For a discussion of the appropriateness of materials concerning the use of child safety devices, see <http://www.aaafoundation.org/resources/index.cfm?button=seated4safetyp> and <http://www.cpsboard.org/>.

The city of Lodi, California, recently has begun a more active program to encourage proper use of child restraints. It is run by the police department but makes active use of the “Partners” organization, a group of retired persons that volunteer time to the department. This group has, along with the police, provided active, publicized inspection sites (see <http://www.lodi.gov/police/btb/btb%20carseats%202.htm>).

#### EXHIBIT V-7

##### Strategy Attributes for Providing Community Locations for Instruction in Proper Child Restraint Use

Attribute	Description
Target	Parents and others desiring to ensure child safety and booster seats are properly used.
Expected Effectiveness	The effectiveness of this strategy has not been documented. With resources available for checking correct use of child safety and booster seats, the percent of incorrectly used seats in a community would be expected to decrease. Publicity about the inspection stations should also encourage the general population of child safety seat users to become more aware of improper use and result in their being more likely to check for proper use on their own.
Keys to Success	<p>The primary key to success is for entities to agree to host inspection stations that are open on a regularly scheduled basis and at times and locations convenient for child safety seat users.</p> <p>Relevant agencies in the community (police, EMS, public health) must be willing to supply certified inspectors to staff the stations, or a sufficient number of qualified citizen volunteers must be recruited for the staffing.</p> <p>Lodi, California, has an active police “partners” program, in which the participants become trained as trainers and then train others within the city. Their goal is to be able to train police, fire, and other partners to allow for the following:</p> <ul style="list-style-type: none"> <li>• Multiple inspection sites</li> <li>• Open locations, such as firehouses, for walk-in inspections</li> <li>• Training police officers when making a traffic stop or other motorist contact to recognize incorrect usage</li> </ul> <p>(contact: Chris Jacobson at <a href="mailto:CJacobson@pd.lodi.gov">CJacobson@pd.lodi.gov</a>)</p>
Potential Difficulties	There may be difficulty finding appropriate locations to attract potential users. Care should also be taken to assure those that come to the centers that no enforcement action would be taken in conjunction with the visit, even if there has been improper use of the device in the past.
Appropriate Measures and Data	Process measures include the number of seats inspected, the number of sites, and the number of inspectors involved. The site-hours and/or inspector-hours of service and the number and percent of incorrect usages are identified and corrected.

**EXHIBIT V-7 (Continued)****Strategy Attributes for Providing Community Locations for Instruction in Proper Child Restraint Use**

Attribute	Description
	<p>Without actually doing a hands-on inspection of the child safety seat with a child in it, it is hard to determine if the seat is being properly used. Therefore, it is difficult to use strictly observational surveys to assess percentage of seats being properly used (while gross misuse can be detected this way, most misuse will be overlooked). It is possible that if checkpoints are being employed for other law enforcement purposes, usage of child restraint devices may be sampled. Presumably, as knowledge of the stations increases and publicity continues, the percentage of child safety and booster seats found being used improperly will decrease. Over a period of time, the percentage of improperly used devices found at the inspection stations can be tracked.</p> <p>It will be difficult to evaluate the safety impact of this type of program. The number of infant injuries in crashes would be an appropriate measure, especially if it were feasible to determine the role of improper usage in the injury. A special study of crashes would be required for this, since normal crash reporting practices do not currently provide the desired level of detail.</p>
Associated Needs	Accurate observations are needed to show local data about improper child restraint use before and after the program is implemented and in comparison to statewide averages.
Organizational, Institutional, and Policy Issues	An advocacy group within the community (either public sector or community based) should encourage the implementation of local, readily-available, child safety seat inspection stations.
Issues Affecting Implementation Time	Key elements of the program affecting implementation time will include finding the appropriate sites and training the inspectors.
Costs Involved	Personnel costs might be involved if the inspectors are paid while on duty at the inspection stations. Another possible cost might be surveys of proper child safety seat use. It is assumed that there will be no costs for use of the inspection station locations. PI&E materials may also need to be produced to advertise the locations and educate the public on their role.
Training and Other Personnel Needs	Child safety seat inspectors must be trained and certified. For information on training and certifying inspectors see <a href="http://www.nhtsa.dot.gov/people/injury/childps/Training/chart.htm">http://www.nhtsa.dot.gov/people/injury/childps/Training/chart.htm</a> .
Legislative Needs	None known at this time.

### **Strategy 8.1 B2: Conduct High-Profile “Child Restraint Inspection” Events at Multiple Community Locations**

This strategy is similar to the first strategy described for this objective. The key difference is that the focus is on a high-profile child restraint inspection event rather than on a single or limited number of inspection locations that are available during specified times only. For this strategy, locations are identified throughout the community on a convenient day (e.g., Saturday). Trained individuals are stationed at those facilities so that people can come to them and have their child restraint use evaluated with minimum wait time. The focus is to educate individuals on proper device use, not on enforcement. Lodi, California, publicizes these events widely, including providing access through their Web page (see <http://www.lodi.gov/police/btb/btb%20carseats%202.htm>).

**EXHIBIT V-8**

## Strategy Attributes for Conduct of High-Profile “Child Restraint Inspection” Events at Multiple Community Locations

Attribute	Description
Target	Parents and others desiring to ensure child safety and booster seats are properly used.
Expected Effectiveness	<p>Effectiveness of this strategy has not been documented. With high-profile events scheduled to check for correct use of child safety and booster seats, the percent of incorrectly used seats in a community would be expected to decrease. Publicity about the inspection events should also encourage the general population of child safety seat users to become more aware of improper use and result in their being more likely to check for proper use on their own.</p> <p>It will be difficult to evaluate the safety impact of this type of program. The number of infant injuries in crashes would be an appropriate measure, especially if it were feasible to determine the role of improper usage in the injury. A special study of crashes would be required for this, since normal crash reporting practices do not currently provide the desired level of detail.</p>
Keys to Success	The primary key to success is to ensure that there are a number of high-visibility inspection stations set up in the community and that each is staffed with a sufficient number of certified technicians so that waiting times for inspections are minimized. All community resources that have an interest in child passenger safety (police, EMS, the medical community, and relevant citizen groups) need to participate and help provide both publicity and the staffing.
Potential Difficulties	<p>None anticipated if there are sufficient sites and inspectors, and information is generated about their availability.</p> <p>There is a need to ensure adequate training of inspectors. Persons receiving such training must be free to use the training when needed. Although police often are the ones trained, they may not be engaged elsewhere when their services are needed. Lodi, California, “Police Partners” (an organization of retired citizens) are receiving the training needed to act as inspectors. They are available for inspections.</p>
Appropriate Measures and Data	<p>Process measures include the number of seats inspected and the number of sites and inspectors involved. The site-hours and/or inspector-hours of service and the number and percent of incorrect usages are identified and corrected.</p> <p>Without actually doing a hands-on inspection of the child safety seat with a child in it, it is difficult to determine if the seat is being properly used. Therefore, it is difficult to use strictly observational surveys to assess percentage of seats being properly used (while gross misuse can be detected this way, most misuse will be missed). It is possible that if checkpoints are being employed for other law enforcement purposes, samples may be taken of proper usage of child restraint devices. Presumably, as knowledge of the stations and publicity continue, the percentage of child safety and booster seats found being used improperly will decrease. If events of this type are done over a period of time, the percentage of improperly used devices found for each event can be tracked.</p>
Associated Needs	Accurate observations are needed to show local data about improper child restraint use before and after the program is implemented and in comparison to statewide averages.
Organizational, Institutional, and Policy Issues	An advocacy group within the community (either public sector or community based) should encourage and be willing to be the primary sponsor of the inspection events.

**EXHIBIT V-8 (Continued)**

## Strategy Attributes for Conduct of High-Profile “Child Restraint Inspection” Events at Multiple Community Locations

Attribute	Description
Issues Affecting Implementation Time	Key elements of the program affecting implementation time will include finding the appropriate sites and training the inspectors.
Costs Involved	Personnel costs might be involved if the inspectors are paid while on duty at the inspection stations. Another possible cost might be surveys of proper child safety seat use. It is assumed that there will be no costs for use of the inspection station locations. Costs associated with PI&E efforts may also be experienced.
Training and Other Personnel Needs	Child safety seat inspectors must be trained and certified. For information on training and certifying inspectors see <a href="http://www.nhtsa.dot.gov/people/injury/childps/Training/chart.htm">http://www.nhtsa.dot.gov/people/injury/childps/Training/chart.htm</a> .
Legislative Needs	None known at this time.

### Strategy 8.1 B3: Train Law Enforcement Personnel to Check for Proper Child Restraint Use in All Motorist Encounters

Unless they have younger children of their own, most police officers have no reason to be familiar with correct use of child restraints. If, on a routine traffic stop or other contact with a motorist, a police officer observes a child in a restraint, most officers will assume the child is being properly protected. All police officers need to be trained and encouraged to look for the common types of misuse of child restraints (see the first strategy in this section) so they can help ensure proper use of these devices.

Like the other strategies in this section, the focus is not on enforcement but rather on education and training. North Carolina and Tennessee train all state troopers in child passenger safety, who are encouraged to check for misuse whenever they have contact with a motorist transporting a child. If improper restraint use is detected, the officer will instruct the adult(s) in charge of the child in proper use, including issuance of written guidelines. A written record of the event should be made so that it is possible to track individuals who continue to use the devices improperly.

Law enforcement agencies may find it difficult to have all their road officers trained and certified as child safety seat technicians. The NHTSA-sanctioned certification course requires attendance for four full days. In a time of increasingly scarce training dollars, many agencies will not be able to make that commitment of staff time for all of their officers. When this is the case, they will need to use other programs that are available for in-service training, so their officers are knowledgeable about the most common errors in child safety seat use. For examples of these programs see <http://www.nhtsa.dot.gov/people/injury/childps/Training/chart.htm> and <http://www.csaa.com/global/articledetail/0,8055,1008030000%257C2792,00.html>.

In cases where officers are not able to fully correct a problem on-site, they will be able to recognize an unsafe situation and refer the vehicle operator to an inspection station (see Strategy 8.1 B1) where the problem can be fully resolved. An example of the type of brochures

agencies provide for the public can be found at <http://www.troopers.state.ny.us/TrafHwy/ChildSeats/CSSindex.html> and <http://www.saferoads.com/pdf/childsafetyseat.pdf>.

Another option is to use Community Service Officers and other law enforcement organizations that assist the police and may have ample opportunity to have contact with motorists. This could be done during parking enforcement, patrols of public parking lots, or in conjunction with special spot checks at local fast food places. The Lee County, Florida, Sheriff's Department has taken active roles in providing such programs in conjunction with fast food retailers (<http://www.sheriffleefl.org/>).

When officers find child restraints not in use or clearly being used contrary to law, enforcement action should be taken.

#### EXHIBIT V-9

#### Strategy Attributes for Training Law Enforcement Personnel to Check for Proper Child Restraint Use in All Motorist Encounters

Attribute	Description
Target	Parents and other adults who are unable or unwilling to ensure that child safety and booster seats are properly used.
Expected Effectiveness	<p>Effectiveness of this strategy has not been documented. Police officers on patrol and making traffic stops will have the opportunity to observe instances of improper child safety seat use. Having officers trained in the most common forms of misuse should aid both the law enforcement agency and community at large in minimizing child restraint misuse.</p> <p>It will be difficult to evaluate the safety impact of this type of program. The number of infant injuries in crashes would be an appropriate measure, especially if it were feasible to determine the role of improper usage in the injury. A special study of crashes would be required for this, since normal crash reporting practices do not currently provide the desired level of detail.</p>
Keys to Success	The primary key to success is for law enforcement officers to be trained in detection of child safety seat misuse. The most desirable solution would be to have the officers trained and certified as child safety seat technicians. See <a href="http://www.nhtsa.dot.gov/people/injury/childps/Training/chart.htm">http://www.nhtsa.dot.gov/people/injury/childps/Training/chart.htm</a> for information about certification. For information on training for officers to detect child safety seat misuse, see <a href="http://www.theiacp.org/profassist/opkids.htm">http://www.theiacp.org/profassist/opkids.htm</a> .
Potential Difficulties	Achieving some minimum acceptable level of training for all relevant officers, primarily because of budget limitations. Trained individuals must be in a position to use their training frequently enough to remain knowledgeable. Officers may not have sufficient time during a contact to complete a thorough inspection.
Appropriate Measures and Data	<p>Process measures include the number of seats inspected and the number and percent of incorrect usages identified and corrected.</p> <p>Without actually doing a hands-on inspection of the child safety seat with a child in it, it is hard to determine if the seat is being properly used. Therefore, it is difficult to use strictly observational surveys to assess percentage of seats being properly used (while gross misuse can be detected this way, most misuse will be overlooked).</p>

**EXHIBIT V-9 (Continued)****Strategy Attributes for Training Law Enforcement Personnel to Check for Proper Child Restraint Use in All Motorist Encounters**

<b>Attribute</b>	<b>Description</b>
Associated Needs	None identified.
Organizational, Institutional, and Policy Issues	The law enforcement agency must be willing to devote resources to ensuring that officers are trained in detecting possible child safety seat misuse. Policy will need to be established to support this strategy and to ensure officer participation. An alternative is to have an assisting organization, such as one consisting of retired citizens as is done in Lodi, California, provide the training or refresher training to the police.
Issues Affecting Implementation Time	Time requirements will hinge upon arranging for trainers and scheduling training of all appropriate personnel.
Costs Involved	Personnel costs might result for trainers and, if they need to receive training during off-duty time, officers.
Training and Other Personnel Needs	Child safety seat inspectors should be trained and certified, and all officers should receive basic training on detecting child safety seat misuse.  Officers may also benefit from motivational messages delivered at such times as roll call.
Legislative Needs	None known at this time.

## **Objective 8.1 C—Provide Access to Materials**

### **Strategy 8.1 C1: Create State-Level Clearing Houses for Materials That Offer Guidance in Implementing Programs to Increase Restraint Use**

Since seat belts first began to appear in motor vehicles, there have been campaigns to increase their use. The situation now is that there are so many materials available to assist agencies in implementing campaigns to increase restraint use that those agencies could be overwhelmed in trying to identify what is appropriate for the program they intend or even defining an appropriate, proven, program for their agency.

For this strategy, an agency, either governmental, nongovernmental, or for-profit (such as insurance agencies/companies), but operating throughout a state, will be needed to take on the task of organizing and cataloging materials available to support campaigns to both increase restraint use and ensure proper restraint use. Additionally, this agency could develop guidelines for evaluating those campaigns.

One of the problems with many of the materials designed for increasing restraint system use is that the programs described in those materials have never been thoroughly evaluated. Evaluation is very important for ensuring that a program is accomplishing what it intended. Too often, the only evaluation for a program is anecdotal and the actual effect of the program is never determined. It is important for the state clearinghouse to not only provide materials relating to improving restraint usage but to also have information as to the actual effectiveness of those materials and the program(s) that they describe.

In addition to state sites and the National Highway Traffic Safety Administration (NHTSA), there are few central sources for information and materials on occupant restraint. The American Automobile Association (AAA) has provided one repository for materials at <http://www.aaafoundation.org/products/index.cfm>. Another resource is Buckle Up America at <http://www.buckleupamerica.org/>.

**EXHIBIT V-10**

Strategy Attributes for Creating State-Level Clearing Houses for Materials That Offer Guidance in Implementing Programs to Increase Restraint Use

Attribute	Description
Target	Agencies within the state that desire access to materials to help plan, implement, or upgrade an occupant restraint program.
Expected Effectiveness	The effectiveness of a support program such as this is not possible to measure in terms of effect on crash severity or even restraint usage. Reports of the effectiveness of this type of program have not been identified.
Keys to Success	<p>One key to success for this effort is to ensure that whoever has responsibility for creating the clearinghouse is able to recognize appropriate program evaluations when assessing materials to be included in the clearinghouse. A meaningful method of indexing materials is also necessary. The quality, rather than the quantity, of the material collected should be a primary goal of the clearinghouse.</p> <p>Another important key to success is accessibility of the materials. Every effort should be made to make these materials available quickly and conveniently. Creation of a web site (see the examples cited above), at which persons can search for materials and download them, or arrange for their shipment, is one example of how this may be done.</p> <p>In addition, it is important that persons be available to assist inquirers who have questions during as much of the day as feasible.</p>
Potential Difficulties	Finding an entity within the state willing to devote the resources required. This includes activities to host the clearinghouse, index and assess all materials before they are included therein, continually update and maintain the material, provide shipping and receiving services, and provide assistance to those requiring it.
Appropriate Measures and Data	The attainment of the strategy may be measured both in terms of its existence (i.e., is there one or not and its hours of operation) and its level of use. Measures of use include number of inquiries and pieces of material distributed. The effectiveness of the operation may also be measured by survey of previous and potential users.
Associated Needs	Special services may be needed to operate the clearinghouse. A web site may be used, requiring a web designer and web master. Stock storage and shipping and receiving capabilities may be needed.
Organizational, Institutional, and Policy Issues	All relevant agencies must support the clearinghouse and advocate the use only of materials in it.

**EXHIBIT V-10 (Continued)**

## Strategy Attributes for Creating State-Level Clearing Houses for Materials That Offer Guidance in Implementing Programs to Increase Restraint Use

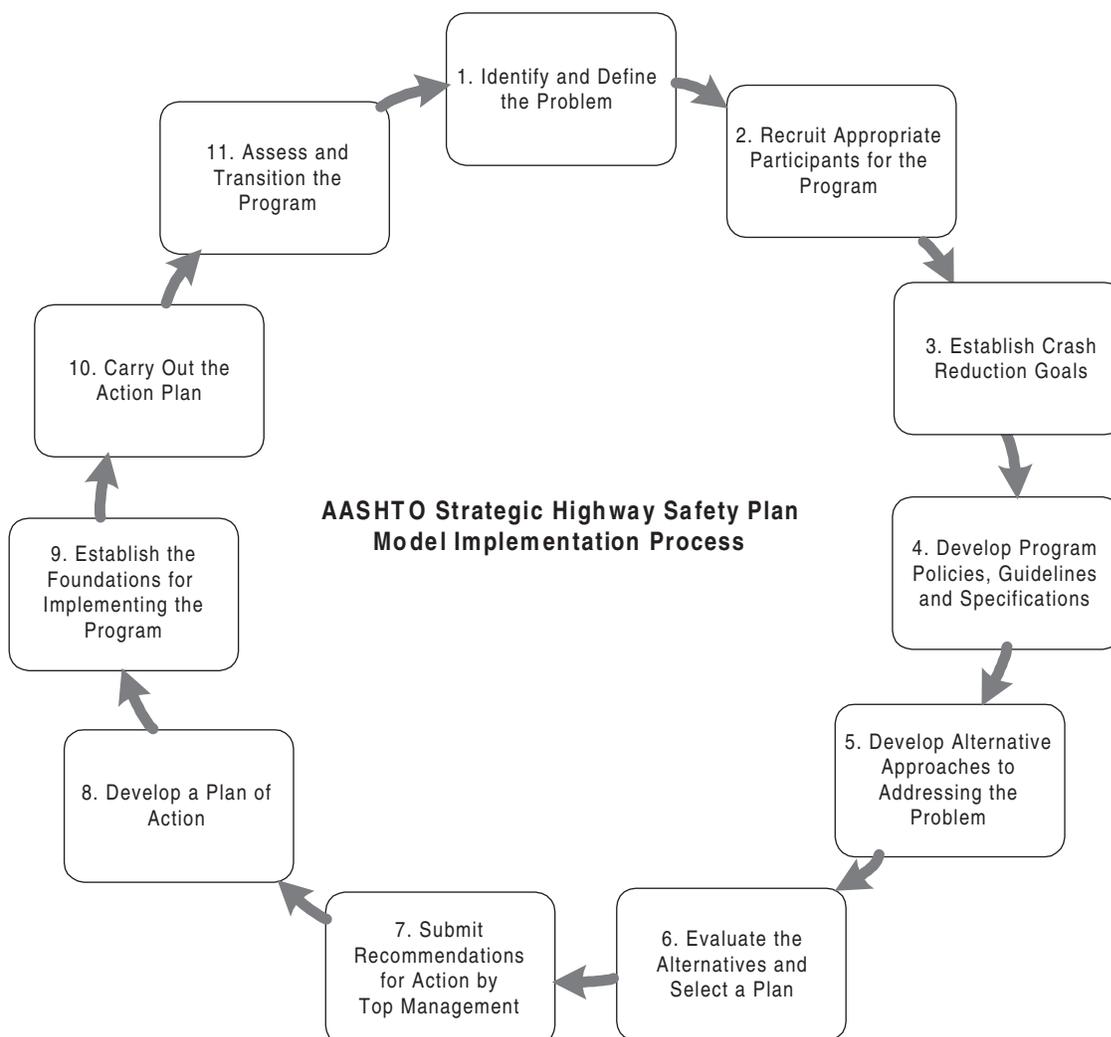
Attribute	Description
Issues Affecting Implementation Time	The time required to implement this will include that necessary to find the facilities, hire and train staff, create a web site, acquire and catalog materials, and prepare public information materials to make potential users aware of the resource. This could take at least 6 months or, more likely, a year.
Costs Involved	Cost elements will include facilities, equipment, operation of a web site, and staff to maintain the operation.
Training and Other Personnel Needs	Staff will need to be trained to assist inquirers. This will require training in the basics of restraint use, an overview of the catalog of materials in terms of their particular type of application, and methods for review and cataloging new materials. A person with a librarian's training or background would be appropriate for one of the staff positions.
Legislative Needs	None.

# Guidance for Implementation of the AASHTO Strategic Highway Safety Plan

## Outline for a Model Implementation Process

Exhibit VI-1 gives an overview of an 11-step model process for implementing a program of strategies for any given emphasis area of the AASHTO Strategic Highway Safety Plan. After a short introduction, each of the steps is outlined in further detail.

EXHIBIT VI-1



## Purpose of the Model Process

The process described in this section is provided as a model rather than a standard. Many users of this guide will already be working within a process established by their agency or working group. It is not suggested that their process be modified to conform to this one. However, the model process may provide a useful checklist. For those not having a standard process to follow, it is recommended that the model process be used to help establish an appropriate one for their initiative. Not all steps in the model process need to be performed at the level of detail indicated in the outlines below. The degree of detail and the amount of work required to complete some of these steps will vary widely, depending upon the situation.

It is important to understand that the process being presented here is assumed to be conducted only as a part of a broader, strategic-level safety management process. The details of that process, and its relation to this one, may be found in a companion guide. (The companion guide is a work in progress at this writing. When it is available, it will be posted online at <http://transportation1.org/safetyplan>.)

## Overview of the Model Process

The process (see Exhibit VI-1, above) must be started at top levels in the lead agency's organization. This would, for example, include the CEO, DOT secretary, or chief engineer, as appropriate. Here, decisions will have been made to focus the agency's attention and resources on specific safety problems based upon the particular conditions and characteristics of the organization's roadway system. This is usually, but not always, documented as a result of the strategic-level process mentioned above. It often is publicized in the form of a "highway safety plan." Examples of what states produce include Wisconsin DOT's Strategic Highway Safety Plan (see [Appendix A](#)) and Iowa's Safety Plan (available at <http://www.iowasms.org/toolbox.htm>).

Once a "high-level" decision has been made to proceed with a particular emphasis area, the first step is to describe, in as much detail as possible, the problem that has been identified in the high-level analysis. The additional detail helps confirm to management that the problem identified in the strategic-level analysis is real and significant and that it is possible to do something about it. The added detail that this step provides to the understanding of the problem will also play an important part in identifying alternative approaches for dealing with it.

Step 1 should produce endorsement and commitments from management to proceed, at least through a planning process. With such an endorsement, it is then necessary to identify the stakeholders and define their role in the effort (Step 2). It is important at this step to identify a range of participants in the process who will be able to help formulate a comprehensive approach to the problem. The group will want to consider how it can draw upon potential actions directed at

- Driver behavior (legislation, enforcement, education, and licensing),
- Engineering,

- Emergency medical systems, and
- System management.

With the establishment of a working group, it is then possible to finalize an understanding of the nature and limitations of what needs to be done in the form of a set of program policies, guidelines, and specifications (Steps 3 and 4). An important aspect of this is establishing targets for crash reduction in the particular emphasis area (Step 3). Identifying stakeholders, defining their roles, and forming guidelines and policies are all elements of what is often referred to as “chartering the team.” In many cases, and in particular where only one or two agencies are to be involved and the issues are not complex, it may be possible to complete Steps 1 through 4 concurrently.

Having received management endorsement and chartered a project team—the foundation for the work—it is now possible to proceed with project planning. The first step in this phase (Step 5 in the overall process) is to identify alternative strategies for addressing the safety problems that have been identified while remaining faithful to the conditions established in Steps 2 through 4.

With the alternative strategies sufficiently defined, they must be evaluated against one another (Step 6) and as groups of compatible strategies (i.e., a total program). The results of the evaluation will form the recommended plan. The plan is normally submitted to the appropriate levels of management for review and input, resulting ultimately in a decision on whether and how to proceed (Step 7). Once the working group has been given approval to proceed, along with any further guidelines that may have come from management, the group can develop a detailed plan of action (Step 8). This is sometimes referred to as an “implementation” or “business” plan.

Plan implementation is covered in Steps 9 and 10. There often are underlying activities that must take place prior to implementing the action plan to form a foundation for what needs to be done (Step 9). This usually involves creating the organizational, operational, and physical infrastructure needed to succeed. The major step (Step 10) in this process involves doing what was planned. This step will in most cases require the greatest resource commitment of the agency. An important aspect of implementation involves maintaining appropriate records of costs and effectiveness to allow the plan to be evaluated after-the-fact.

Evaluating the program, after it is underway, is an important activity that is often overlooked. Management has the right to require information about costs, resources, and effectiveness. It is also likely that management will request that the development team provide recommendations about whether the program should be continued and, if so, what revisions should be made. Note that management will be deciding on the future for any single emphasis area in the context of the entire range of possible uses of the agency’s resources. Step 11 involves activities that will give the desired information to management for each emphasis area.

To summarize, the implementation of a program of strategies for an emphasis area can be characterized as an 11-step process. The steps in the process correspond closely to a 4-phase approach commonly followed by many transportation agencies:

- Endorsement and chartering of the team and project (Steps 1 through 4),
- Project planning (Steps 5 through 8),
- Plan implementation (Steps 9 and 10), and
- Plan evaluation (Step 11).

Details about each step follow. The Web-based version of this description is accompanied by a set of supplementary material to enhance and illustrate the points.

The model process is intended to provide a framework for those who need it. It is not intended to be a how-to manual. There are other documents that provide extensive detail regarding how to conduct this type of process. Some general ones are covered in [Appendix B](#) and [Appendix C](#). Others, which relate to specific aspects of the process, are referenced within the specific sections to which they apply.

# Implementation Step 1: Identify and Define the Problem

## General Description

Program development begins with gathering data and creating and analyzing information. The implementation process being described in this guide is one that will be done in the context of a larger strategic process. It is expected that this guide will be used when the strategic process, or a project-level analysis, has identified a potentially significant problem in this emphasis area.

Data analyses done at the strategic level normally are done with a limited amount of detail. They are usually the top layer in a “drill-down” process. Therefore, while those previous analyses should be reviewed and used as appropriate, it will often be the case that further studies are needed to completely define the issues.

It is also often the case that a core technical working group will have been formed by the lead agency to direct and carry out the process. This group can conduct the analyses required in this step, but should seek, as soon as possible, to involve any other stakeholders who may desire to provide input to this process. Step 2 deals further with the organization of the working group.

The objectives of this first step are as follows:

1. Confirm that a problem exists in this emphasis area.
2. Detail the characteristics of the problem to allow identification of likely approaches for eliminating or reducing it.
3. Confirm with management, given the new information, that the planning and implementation process should proceed.

The objectives will entail locating the best available data and analyzing them to highlight either geographic concentrations of the problem or over-representation of the problem within the population being studied.

Identification of existing problems is a *responsive approach*. This can be complemented by a *proactive approach* that seeks to identify potentially hazardous conditions or populations.

For the responsive type of analyses, one generally begins with basic crash records that are maintained by agencies within the jurisdiction. This is usually combined, where feasible, with other safety data maintained by one or more agencies. The other data could include

- Roadway inventory,
- Driver records (enforcement, licensing, courts), or
- Emergency medical service and trauma center data.

To have the desired level of impact on highway safety, it is important to consider the highway system as a whole. Where multiple jurisdictions are responsible for various parts of the system, they should all be included in the analysis, wherever possible. The best example of this is a state plan for highway safety that includes consideration of the extensive

mileage administered by local agencies. To accomplish problem identification in this manner will require a cooperative, coordinated process. For further discussion on the problem identification process, see [Appendix D](#) and the further references contained therein.

In some cases, very limited data are available for a portion of the roads in the jurisdiction. This can occur for a local road maintained by a state or with a local agency that has very limited resources for maintaining major databases. Lack of data is a serious limitation to this process, but must be dealt with. It may be that for a specific study, special data collection efforts can be included as part of the project funding. While crash records may be maintained for most of the roads in the system, the level of detail, such as good location information, may be quite limited. It is useful to draw upon local knowledge to supplement data, including

- Local law enforcement,
- State district and maintenance engineers,
- Local engineering staff, and
- Local residents and road users.

These sources of information may provide useful insights for identifying hazardous locations. In addition, local transportation agencies may be able to provide supplementary data from their archives. Finally, some of the proactive approaches mentioned below may be used where good records are not available.

Maximum effectiveness often calls for going beyond data in the files to include special supplemental data collected on crashes, behavioral data, site inventories, and citizen input. Analyses should reflect the use of statistical methods that are currently recognized as valid within the profession.

Proactive elements could include

- Changes to policies, design guides, design criteria, and specifications based upon research and experience;
- Retrofitting existing sites or highway elements to conform to updated criteria (perhaps with an appropriate priority scheme);
- Taking advantage of lessons learned from previous projects;
- Road safety audits, including on-site visits;
- Safety management based on roadway inventories;
- Input from police officers and road users; and
- Input from experts through such programs as the NHTSA traffic records assessment team.

The result of this step is normally a report that includes tables and graphs that clearly demonstrate the types of problems and detail some of their key characteristics. Such reports

should be presented in a manner to allow top management to quickly grasp the key findings and help them decide which of the emphasis areas should be pursued further, and at what level of funding. However, the report must also document the detailed work that has been done, so that those who do the later stages of work will have the necessary background.

## Specific Elements

1. Define the scope of the analysis
  - 1.1. All crashes in the entire jurisdiction
  - 1.2. A subset of crash types (whose characteristics suggest they are treatable, using strategies from the emphasis area)
  - 1.3. A portion of the jurisdiction
  - 1.4. A portion of the population (whose attributes suggest they are treatable using strategies from the emphasis area)
2. Define safety measures to be used for responsive analyses
  - 2.1. Crash measures
    - 2.1.1. Frequency (all crashes or by crash type)
    - 2.1.2. Measures of exposure
    - 2.1.3. Decide on role of frequency versus rates
  - 2.2. Behavioral measures
    - 2.2.1. Conflicts
    - 2.2.2. Erratic maneuvers
    - 2.2.3. Illegal maneuvers
    - 2.2.4. Aggressive actions
    - 2.2.5. Speed
  - 2.3. Other measures
    - 2.3.1. Citizen complaints
    - 2.3.2. Marks or damage on roadway and appurtenances, as well as crash debris
3. Define measures for proactive analyses
  - 3.1. Comparison with updated and changed policies, design guides, design criteria, and specifications
  - 3.2. Conditions related to lessons learned from previous projects
  - 3.3. Hazard indices or risk analyses calculated using data from roadway inventories to input to risk-based models
  - 3.4. Input from police officers and road users
4. Collect data
  - 4.1. Data on record (e.g., crash records, roadway inventory, medical data, driver-licensing data, citations, other)
  - 4.2. Field data (e.g., supplementary crash and inventory data, behavioral observations, operational data)
  - 4.3. Use of road safety audits, or adaptations
5. Analyze data
  - 5.1. Data plots (charts, tables, and maps) to identify possible patterns, and concentrations (See [Appendixes Y, Z](#) and [AA](#) for examples of what some states are doing)

- 5.2. Statistical analysis (high-hazard locations, over-representation of contributing circumstances, crash types, conditions, and populations)
- 5.3. Use expertise, through road safety audits or program assessment teams
- 5.4. Focus upon key attributes for which action is feasible:
  - 5.4.1. Factors potentially contributing to the problems
  - 5.4.2. Specific populations contributing to, and affected by, the problems
  - 5.4.3. Those parts of the system contributing to a large portion of the problem
6. Report results and receive approval to pursue solutions to identified problems (*approvals being sought here are primarily a confirmation of the need to proceed and likely levels of resources required*)
  - 6.1. Sort problems by type
    - 6.1.1. Portion of the total problem
    - 6.1.2. Vehicle, highway/environment, enforcement, education, other driver actions, emergency medical system, legislation, and system management
    - 6.1.3. According to applicable funding programs
    - 6.1.4. According to political jurisdictions
  - 6.2. Preliminary listing of the types of strategies that might be applicable
  - 6.3. Order-of-magnitude estimates of time and cost to prepare implementation plan
  - 6.4. Listing of agencies that should be involved, and their potential roles (including an outline of the organizational framework intended for the working group). Go to Step 2 for more on this.

## Implementation Step 2: Recruit Appropriate Participants for the Program

### General Description

A critical early step in the implementation process is to engage all the stakeholders that may be encompassed within the scope of the planned program. The stakeholders may be from outside agencies (e.g., state patrol, county governments, or citizen groups). One criterion for participation is if the agency or individual will help ensure a comprehensive view of the problem and potential strategies for its resolution. If there is an existing structure (e.g., a State Safety Management System Committee) of stakeholders for conducting strategic planning, it is important to relate to this, and build on it, for addressing the detailed considerations of the particular emphasis area.

There may be some situations within the emphasis area for which no other stakeholders may be involved other than the lead agency and the road users. However, in most cases, careful consideration of the issues will reveal a number of potential stakeholders to possibly be involved. Furthermore, it is usually the case that a potential program will proceed better in the organizational and institutional setting if a high-level “champion” is found in the lead agency to support the effort and act as a key liaison with other stakeholders.

Stakeholders should already have been identified in the previous step, at least at a level to allow decision makers to know whose cooperation is needed, and what their potential level of involvement might be. During this step, the lead agency should contact the key individuals in each of the external agencies to elicit their participation and cooperation. This will require identifying the right office or organizational unit, and the appropriate people in each case. It will include providing them with a brief overview document and outlining for them the type of involvement envisioned. This may typically involve developing interagency agreements. The participation and cooperation of each agency should be secured to ensure program success.

Lists of appropriate candidates for the stakeholder groups are recorded in [Appendix K](#). In addition, reference may be made to the NHTSA document at <http://www.nhtsa.dot.gov/safecommunities/SAFE%20COMM%20Html/index.html>, which provides guidance on building coalitions.

### Specific Elements

1. Identify internal “champions” for the program
2. Identify the suitable contact in each of the agencies or private organizations who is appropriate to participate in the program
3. Develop a brief document that helps sell the program and the contact’s role in it by
  - 3.1. Defining the problem
  - 3.2. Outlining possible solutions
  - 3.3. Aligning the agency or group mission by resolving the problem
  - 3.4. Emphasizing the importance the agency has to the success of the effort

- 3.5. Outlining the organizational framework for the working group and other stakeholders cooperating on this effort
- 3.6. Outlining the rest of the process in which agency staff or group members are being asked to participate
- 3.7. Outlining the nature of commitments desired from the agency or group for the program
- 3.8. Establishing program management responsibilities, including communication protocols, agency roles, and responsibilities
- 3.9. Listing the purpose for an initial meeting
4. Meet with the appropriate representative
  - 4.1. Identify the key individual(s) in the agency or group whose approval is needed to get the desired cooperation
  - 4.2. Clarify any questions or concepts
  - 4.3. Outline the next steps to get the agency or group onboard and participating
5. Establish an organizational framework for the group
  - 5.1. Roles
  - 5.2. Responsibilities

## Implementation Step 3: Establish Crash Reduction Goals

### General Description

The AASHTO Strategic Highway Safety Plan established a national goal of saving 5,000 to 7,000 lives annually by the year 2005. Some states have established statewide goals for the reduction of fatalities or crashes of a certain degree of severity. Establishing an explicit goal for crash reduction can place an agency “on the spot,” but it usually provides an impetus to action and builds a support for funding programs for its achievement. Therefore, it is desirable to establish, within each emphasis area, one or more crash reduction targets.

These may be dictated by strategic-level planning for the agency, or it may be left to the stakeholders to determine. (The summary of the Wisconsin DOT Highway Safety Plan in [Appendix A](#) has more information.) For example, Pennsylvania adopted a goal of 10 percent reduction in fatalities by 2002,<sup>1</sup> while California established a goal of 40 percent reduction in fatalities and 15 percent reduction in injury crashes, as well as a 10 percent reduction in work zone crashes, in 1 year.<sup>2</sup> At the municipal level, Toledo, Ohio, is cited by the U.S. Conference of Mayors as having an exemplary program. This included establishing specific crash reduction goals ([http://www.usmayors.org/uscm/uscm\\_projects\\_services/health/traffic/best\\_traffic\\_initiative\\_toledo.htm](http://www.usmayors.org/uscm/uscm_projects_services/health/traffic/best_traffic_initiative_toledo.htm)). When working within an emphasis area, it may be desirable to specify certain types of crashes, as well as the severity level, being targeted.

There are a few key considerations for establishing a quantitative goal. The stakeholders should achieve consensus on this issue. The goal should be challenging, but achievable. Its feasibility depends in part on available funding, the timeframe in which the goal is to be achieved, the degree of complexity of the program, and the degree of controversy the program may experience. To a certain extent, the quantification of the goal will be an iterative process. If the effort is directed at a particular location, then this becomes a relatively straightforward action.

### Specific Elements

1. Identify the type of crashes to be targeted
  - 1.1. Subset of all crash types
  - 1.2. Level of severity
2. Identify existing statewide or other potentially related crash reduction goals
3. Conduct a process with stakeholders to arrive at a consensus on a crash reduction goal
  - 3.1. Identify key considerations
  - 3.2. Identify past goals used in the jurisdiction
  - 3.3. Identify what other jurisdictions are using as crash reduction goals
  - 3.4. Use consensus-seeking methods, as needed

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<sup>1</sup> Draft State Highway Safety Plan, State of Pennsylvania, July 22, 1999

<sup>2</sup> Operations Program Business Plan, FY 1999/2000, State of California, Caltrans, July 1999

## Implementation Step 4: Develop Program Policies, Guidelines, and Specifications

### General Description

A foundation and framework are needed for solving the identified safety problems. The implementation process will need to be guided and evaluated according to a set of goals, objectives, and related performance measures. These will formalize what the intended result is and how success will be measured. The overlying crash reduction goal, established in Step 3, will provide the context for the more specific goals established in this step. The goals, objectives, and performance measures will be used much later to evaluate what is implemented. Therefore, they should be jointly outlined at this point and agreed to by all program stakeholders. It is important to recognize that evaluating any actions is an important part of the process. Even though evaluation is not finished until some time after the strategies have been implemented, it begins at this step.

The elements of this step may be simpler for a specific project or location than for a comprehensive program. However, even in the simpler case, policies, guidelines, and specifications are usually needed. Furthermore, some programs or projects may require that some guidelines or specifications be in the form of limits on directions taken and types of strategies considered acceptable.

### Specific Elements

1. Identify high-level policy actions required and implement them (legislative and administrative)
2. Develop goals, objectives, and performance measures to guide the program and use for assessing its effect
  - 2.1. Hold joint meetings of stakeholders
  - 2.2. Use consensus-seeking methods
  - 2.3. Carefully define terms and measures
  - 2.4. Develop report documenting results and validate them
3. Identify specifications or constraints to be used throughout the project
  - 3.1. Budget constraints
  - 3.2. Time constraints
  - 3.3. Personnel training
  - 3.4. Capacity to install or construct
  - 3.5. Types of strategies not to be considered or that must be included
  - 3.6. Other

## Implementation Step 5: Develop Alternative Approaches to Addressing the Problem

### General Description

Having defined the problem and established a foundation, the next step is to find ways to address the identified problems. If the problem identification stage has been done effectively (see [Appendix D](#) for further details on identifying road safety problems), the characteristics of the problems should suggest one or more alternative ways for dealing with the problem. It is important that a full range of options be considered, drawing from areas dealing with enforcement, engineering, education, emergency medical services, and system management actions.

Alternative strategies should be sought for both location-specific and systemic problems that have been identified. Location-specific strategies should pertain equally well to addressing high-hazard locations and to solving safety problems identified within projects that are being studied for reasons other than safety.

Where site-specific strategies are being considered, visits to selected sites may be in order if detailed data and pictures are not available. In some cases, the emphasis area guides will provide tables that help connect the attributes of the problem with one or more appropriate strategies to use as countermeasures.

Strategies should also be considered for application on a systemic basis. Examples include

1. Low-cost improvements targeted at problems that have been identified as significant in the overall highway safety picture, but not concentrated in a given location.
2. Action focused upon a specific driver population, but carried out throughout the jurisdiction.
3. Response to a change in policy, including modified design standards.
4. Response to a change in law, such as adoption of a new definition for DUI.

In some cases, a strategy may be considered that is relatively untried or is an innovative variation from past approaches to treatment of a similar problem. Special care is needed to ensure that such strategies are found to be sound enough to implement on a wide-scale basis. Rather than ignoring this type of candidate strategy in favor of the more “tried-and-proven” approaches, consideration should be given to including a pilot-test component to the strategy.

The primary purpose of this guide is to provide a set of strategies to consider for eliminating or lessening the particular road safety problem upon which the user is focusing. As pointed out in the first step of this process, the identification of the problem, and the selection of strategies, is a complex step that will be different for each case. Therefore, it is not feasible to provide a “formula” to follow. However, guidelines are available. There are a number of texts to which the reader can refer. Some of these are listed in [Appendix B](#) and [Appendix D](#).

In addition, the tables referenced in [Appendix G](#) provide examples for linking identified problems with candidate strategies.

The second part of this step is to assemble sets of strategies into alternative “program packages.” Some strategies are complementary to others, while some are more effective when combined with others. In addition, some strategies are mutually exclusive. Finally, strategies may be needed to address roads across multiple jurisdictions. For instance, a package of strategies may need to address both the state and local highway system to have the desired level of impact. The result of this part of the activity will be a set of alternative “program packages” for the emphasis area.

It may be desirable to prepare a technical memorandum at the end of this step. It would document the results, both for input into the next step and for internal reviews. The latter is likely to occur, since this is the point at which specific actions are being seriously considered.

### **Specific Elements**

1. Review problem characteristics and compare them with individual strategies, considering both their objectives and their attributes
  - 1.1. Road-user behavior (law enforcement, licensing, adjudication)
  - 1.2. Engineering
  - 1.3. Emergency medical services
  - 1.4. System management elements
2. Select individual strategies that do the following:
  - 2.1. Address the problem
  - 2.2. Are within the policies and constraints established
  - 2.3. Are likely to help achieve the goals and objectives established for the program
3. Assemble individual strategies into alternative program packages expected to optimize achievement of goals and objectives
  - 3.1. Cumulative effect to achieve crash reduction goal
  - 3.2. Eliminate strategies that can be identified as inappropriate, or likely to be ineffective, even at this early stage of planning
4. Summarize the plan in a technical memorandum, describing attributes of individual strategies, how they will be combined, and why they are likely to meet the established goals and objectives

## Implementation Step 6: Evaluate Alternatives and Select a Plan

### General Description

This step is needed to arrive at a logical basis for prioritizing and selecting among the alternative strategies or program packages that have been developed. There are several activities that need to be performed. One proposed list is shown in [Appendix P](#).

The process involves making estimates for each of the established performance measures for the program and comparing them, both individually and in total. To do this in a quantitative manner requires some basis for estimating the effectiveness of each strategy. Where solid evidence has been found on effectiveness, it has been presented for each strategy in the guide. In some cases, agencies have a set of crash reduction factors that are used to arrive at effectiveness estimates. Where a high degree of uncertainty exists, it is wise to use sensitivity analyses to test the validity of any conclusions that may be made regarding which is the best strategy or set of strategies to use. Further discussion of this may be found in [Appendix O](#).

Cost-benefit and cost-effectiveness analyses are usually used to help identify inefficient or inappropriate strategies, as well as to establish priorities. For further definition of the two terms, see [Appendix Q](#). For a comparison of the two techniques, see [Appendix S](#). Aspects of feasibility, other than economic, must also be considered at this point. An excellent set of references is provided within online benefit-cost guides:

- One is under development at the following site, maintained by the American Society of Civil Engineers: [http://ceenve.calpoly.edu/sullivan/cutep/cutep\\_bc\\_outline\\_main.htm](http://ceenve.calpoly.edu/sullivan/cutep/cutep_bc_outline_main.htm)
- The other is *Guide to Benefit-Cost Analysis in Transport Canada*, September 1994, [http://www.tc.gc.ca/finance/bca/en/TOC\\_e.htm](http://www.tc.gc.ca/finance/bca/en/TOC_e.htm). An overall summary of this document is given in [Appendix V](#).

In some cases, a strategy or program may look promising, but no evidence may be available as to its likely effectiveness. This would be especially true for innovative methods or use of emerging technologies. In such cases, it may be advisable to plan a pilot study to arrive at a minimum level of confidence in its effectiveness, before large-scale investment is made or a large segment of the public is involved in something untested.

It is at this stage of detailed analysis that the crash reduction goals, set in Step 3, may be revisited, with the possibility of modification.

It is important that this step be conducted with the full participation of the stakeholders. If the previous steps were followed, the working group will have the appropriate representation. Technical assistance from more than one discipline may be necessary to go through more complex issues. Group consensus will be important on areas such as estimates of effectiveness, as well as the rating and ranking of alternatives. Techniques are available to assist in arriving at consensus. For example, see the following Web site for an overview: [http://web.mit.edu/publicdisputes/practice/cbh\\_ch1.html](http://web.mit.edu/publicdisputes/practice/cbh_ch1.html).

## Specific Elements

1. Assess feasibility
  - 1.1. Human resources
  - 1.2. Special constraints
  - 1.3. Legislative requirements
  - 1.4. Other
  - 1.5. This is often done in a qualitative way, to narrow the list of choices to be studied in more detail (see, for example, [Appendix BB](#))
2. Estimate values for each of the performance measures for each strategy and plan
  - 2.1. Estimate costs and impacts
    - 2.1.1. Consider guidelines provided in the detailed description of strategies in this material
    - 2.1.2. Adjust as necessary to reflect local knowledge or practice
    - 2.1.3. Where a plan or program is being considered that includes more than one strategy, combine individual estimates
  - 2.2. Prepare results for cost-benefit and/or cost-effectiveness analyses
  - 2.3. Summarize the estimates in both disaggregate (by individual strategy) and aggregate (total for the program) form
3. Conduct a cost-benefit and/or cost-effectiveness analysis to identify inefficient, as well as dominant, strategies and programs and to establish a priority for the alternatives
  - 3.1. Test for dominance (both lower cost and higher effectiveness than others)
  - 3.2. Estimate relative cost-benefit and/or cost-effectiveness
  - 3.3. Test productivity
4. Develop a report that documents the effort, summarizing the alternatives considered and presenting a preferred program, as devised by the working group (for suggestions on a report of a benefit-cost analysis, see [Appendix U](#)).
  - 4.1. Designed for high-level decision makers, as well as technical personnel who would be involved in the implementation
  - 4.2. Extensive use of graphics and layout techniques to facilitate understanding and capture interest
  - 4.3. Recommendations regarding meeting or altering the crash reduction goals established in Step 3.

## Implementation Step 7: Submit Recommendations for Action by Top Management

### General Description

The working group has completed the important planning tasks and must now submit the results and conclusions to those who will make the decision on whether to proceed further. Top management, at this step, will primarily be determining if an investment will be made in this area. As a result, the plan will not only be considered on the basis of its merits for solving the particular problems identified in this emphasis area (say, vis-à-vis other approaches that could be taken to deal with the specific problems identified), but also its relative value in relation to investments in other aspects of the road safety program.

This aspect of the process involves using the best available communication skills to adequately inform top management. The degree of effort and extent of use of media should be proportionate to the size and complexity of the problem being addressed, as well as the degree to which there is competition for funds.

The material that is submitted should receive careful review by those with knowledge in report design and layout. In addition, today's technology allows for the development of automated presentations, using animation and multimedia in a cost-effective manner. Therefore, programs involving significant investments that are competing strongly for implementation resources should be backed by such supplementary means for communicating efficiently and effectively with top management.

### Specific Elements

1. Submit recommendations for action by management
  - 1.1. "Go/no-go" decision
  - 1.2. Reconsideration of policies, guidelines, and specifications (see Step 3)
  - 1.3. Modification of the plan to accommodate any revisions to the program framework made by the decision makers
2. Working group to make presentations to decision makers and other groups, as needed and requested
3. Working group to provide technical assistance with the review of the plan, as requested
  - 3.1. Availability to answer questions and provide further detail
  - 3.2. Assistance in conducting formal assessments

## Implementation Step 8: Develop a Plan of Action

### General Description

At this stage, the working group will usually detail the program that has been selected for implementation. This step translates the program into an action plan, with all the details needed by both decision makers, who will have to commit to the investment of resources, and those charged with carrying it out. The effort involves defining resource requirements, organizational and institutional arrangements needed, schedules, etc. This is usually done in the form of a business plan, or plan of action. An example of a plan developed by a local community is shown in [Appendix X](#).

An evaluation plan should be designed at this point. It is an important part of the plan. This is something that should be in place before Step 9 is finished. It is not acceptable to wait until after the program is completed to begin designing an evaluation of it. This is because data are needed about conditions before the program starts, to allow comparison with conditions during its operation and after its completion. It also should be designed at this point, to achieve consensus among the stakeholders on what constitutes “success.” The evaluation is used to determine just how well things were carried out and what effect the program had. Knowing this helps maintain the validity of what is being done, encourages future support from management, and provides good intelligence on how to proceed after the program is completed. For further details on performing evaluations, see [Appendix L](#), [Appendix M](#), and [Appendix W](#).

The plan of action should be developed jointly with the involvement of all desired participants in the program. It should be completed to the detail necessary to receive formal approval of each agency during the next step. The degree of detail and complexity required for this step will be a function of the size and scope of the program, as well as the number of independent agencies involved.

### Specific Elements

1. Translation of the selected program into key resource requirements
  - 1.1. Agencies from which cooperation and coordination is required
  - 1.2. Funding
  - 1.3. Personnel
  - 1.4. Data and information
  - 1.5. Time
  - 1.6. Equipment
  - 1.7. Materials
  - 1.8. Training
  - 1.9. Legislation
2. Define organizational and institutional framework for implementing the program
  - 2.1. Include high-level oversight group
  - 2.2. Provide for involvement in planning at working levels
  - 2.3. Provide mechanisms for resolution of issues that may arise and disagreements that may occur
  - 2.4. Secure human and financial resources required

3. Detail a program evaluation plan
  - 3.1. Goals and objectives
  - 3.2. Process measures
  - 3.3. Performance measures
    - 3.3.1. Short-term, including surrogates, to allow early reporting of results
    - 3.3.2. Long-term
  - 3.4. Type of evaluation
  - 3.5. Data needed
  - 3.6. Personnel needed
  - 3.7. Budget and time estimates
4. Definition of tasks to conduct the work
  - 4.1. Develop diagram of tasks (e.g., PERT chart)
  - 4.2. Develop schedule (e.g., Gantt chart)
  - 4.3. For each task, define
    - 4.3.1. Inputs
    - 4.3.2. Outputs
    - 4.3.3. Resource requirements
    - 4.3.4. Agency roles
    - 4.3.5. Sequence and dependency of tasks
5. Develop detailed budget
  - 5.1. By task
  - 5.2. Separate by source and agency/office (i.e., cost center)
6. Produce program action plan, or business plan document

## Implementation Step 9: Establish Foundations for Implementing the Program

### General Description

Once approved, some “groundwork” is often necessary to establish a foundation for carrying out the selected program. This is somewhat similar to what was done in Step 4. It must now be done in greater detail and scope for the specific program being implemented. As in Step 4, specific policies and guidelines must be developed, organizational and institutional arrangements must be initiated, and an infrastructure must be created for the program. The business plan or action plan provides the basis (Step 7) for this. Once again, the degree of complexity required will vary with the scope and size of the program, as well as the number of agencies involved.

### Specific Elements

1. Refine policies and guidelines (from Step 4)
2. Effect required legislation or regulations
3. Allocate budget
4. Reorganize implementation working group
5. Develop program infrastructure
  - 5.1. Facilities and equipment for program staff
  - 5.2. Information systems
  - 5.3. Communications
  - 5.4. Assignment of personnel
  - 5.5. Administrative systems (monitoring and reporting)
6. Set up program assessment system
  - 6.1. Define/refine/revise performance and process measures
  - 6.2. Establish data collection and reporting protocols
  - 6.3. Develop data collection and reporting instruments
  - 6.4. Measure baseline conditions

## Implementation Step 10: Carry Out the Action Plan

### General Description

Conditions have been established to allow the program to be started. The activities of implementation may be divided into activities associated with field preparation for whatever actions are planned and the actual field implementation of the plan. The activities can involve design and development of program actions, actual construction or installation of program elements, training, and the actual operation of the program. This step also includes monitoring for the purpose of maintaining control and carrying out mid- and post-program evaluation of the effort.

### Specific Elements

1. Conduct detailed design of program elements
  - 1.1. Physical design elements
  - 1.2. PI&E materials
  - 1.3. Enforcement protocols
  - 1.4. Etc.
2. Conduct program training
3. Develop and acquire program materials
4. Develop and acquire program equipment
5. Conduct pilot tests of untested strategies, as needed
6. Program operation
  - 6.1. Conduct program “kickoff”
  - 6.2. Carry out monitoring and management of ongoing operation
    - 6.2.1 Periodic measurement (process and performance measures)
    - 6.2.2 Adjustments as required
  - 6.3. Perform interim and final reporting

## Implementation Step 11: Assess and Transition the Program

### General Description

The AASHTO Strategic Highway Safety Plan includes improvement in highway safety management. A key element of that is the conduct of properly designed program evaluations. The program evaluation will have been first designed in Step 8, which occurs prior to any field implementation. For details on designing an evaluation, please refer to [Step 8](#). For an example of how the New Zealand Transport Authority takes this step as an important part of the process, see [Appendix N](#).

The program will usually have a specified operational period. An evaluation of both the process and performance will have begun prior to the start of implementation. It may also continue during the course of the implementation, and it will be completed after the operational period of the program.

The overall effectiveness of the effort should be measured to determine if the investment was worthwhile and to guide top management on how to proceed into the post-program period. This often means that there is a need to quickly measure program effectiveness in order to provide a preliminary idea of the success or need for immediate modification. This will be particularly important early in development of the AASHTO Strategic Highway Safety Plan, as agencies learn what works best. Therefore, surrogates for safety impact may have to be used to arrive at early/interim conclusions. These usually include behavioral measures. This particular need for interim surrogate measures should be dealt with when the evaluation is designed, back in Step 8. However, a certain period, usually a minimum of a couple of years, will be required to properly measure the effectiveness and draw valid conclusions about programs designed to reduce highway fatalities when using direct safety performance measures.

The results of the work is usually reported back to those who authorized it and the stakeholders, as well as any others in management who will be involved in determining the future of the program. Decisions must be made on how to continue or expand the effort, if at all. If a program is to be continued or expanded (as in the case of a pilot study), the results of its assessment may suggest modifications. In some cases, a decision may be needed to remove what has been placed in the highway environment as part of the program because of a negative impact being measured. Even a “permanent” installation (e.g., rumble strips) requires a decision regarding investment for future maintenance if it is to continue to be effective.

Finally, the results of the evaluation using performance measures should be fed back into a knowledge base to improve future estimates of effectiveness.

### Specific Elements

1. Analysis
  - 1.1. Summarize assessment data reported during the course of the program
  - 1.2. Analyze both process and performance measures (both quantitative and qualitative)

- 1.3. Evaluate the degree to which goals and objectives were achieved (using performance measures)
- 1.4. Estimate costs (especially vis-à-vis pre-implementation estimates)
- 1.5. Document anecdotal material that may provide insight for improving future programs and implementation efforts
- 1.6. Conduct and document debriefing sessions with persons involved in the program (including anecdotal evidence of effectiveness and recommended revisions)
2. Report results
3. Decide how to transition the program
  - 3.1. Stop
  - 3.2. Continue as is
  - 3.3. Continue with revisions
  - 3.4. Expand as is
  - 3.5. Expand with revisions
  - 3.6. Reverse some actions
4. Document data for creating or updating database of effectiveness estimates

## SECTION VII

# Key References

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# Appendixes

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The following appendixes are not published in this report. However, they are available online at <http://transportation1.org/safetyplan>.

- 1 Example of Local Ordinance Establishing Primary Enforcement of Seat Belt Usage
- A Wisconsin Department of Transportation 2001 Strategic Highway Safety Plan
- B Resources for the Planning and Implementation of Highway Safety Programs
- C South African Road Safety Manual
- D Comments on Problem Definition
- E Issues Associated with Use of Safety Information in Highway Design: Role of Safety in Decision Making
- F Comprehensive Highway Safety Improvement Model
- G Table Relating Candidate Strategies to Safety Data Elements
- H What Is a Road Safety Audit?
- I Illustration of Regression to the Mean
- J Fault Tree Analysis
- K Lists of Potential Stakeholders
- L Conducting an Evaluation
- M Designs for a Program Evaluation
- N Joint Crash Reduction Programme: Outcome Monitoring
- O Estimating the Effectiveness of a Program During the Planning Stages
- P Key Activities for Evaluating Alternative Program
- Q Definitions of Cost-Benefit and Cost-Effectiveness
- R FHWA Policy on Life Cycle Costing
- S Comparisons of Benefit-Cost and Cost-Effectiveness Analysis
- T Issues in Cost-Benefit and Cost-Effectiveness Analyses
- U Transport Canada Recommended Structure for a Benefit-Cost Analysis Report
- V Overall Summary of Benefit-Cost Analysis Guide from Transport Canada
- W Program Evaluation—Its Purpose and Nature
- X Traffic Safety Plan for a Small Department
- Y Sample District-Level Crash Statistical Summary
- Z Sample Intersection Crash Summaries
- AA Sample Intersection Collision Diagram
- BB Example Application of the Unsignalized Intersection Guide

Abbreviations used without definitions in TRB publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
NCHRP	National Cooperative Highway Research Program
NCTRP	National Cooperative Transit Research and Development Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
SAE	Society of Automotive Engineers
TCRP	Transit Cooperative Research Program
TRB	Transportation Research Board
U.S.DOT	United States Department of Transportation